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THE ORGAN

BY

JOHN STAINER

A NEW EDITION

CRITICALLY REVISED, WITH NUMEROUS ADDENDA, AND ADAPTED TO
THE REQUIREMENTS OF BOTH PNEUMATIC AND
ELECTRIC ACTIONS

BY

F. FLAXINGTON HARKER

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PREFACE TO THE ORIGINAL EDITION.

THERE are two ways in which time may be devoted to the practice of a musical instrument. The first and most common is, to avoid the difficulties which present themselves, and to be content with mastering just so much of the art of playing as will afford a little amusement; the other is, to face at once the special difficulties of the instrument and persevere until they are surmounted. By the former, a player cannot possibly rise above a very mediocre standard, and his performance will never receive higher praise than that of being called tolerable; but by the latter, the highest excellence will be within reach, and the student will be limited in its attainment only by the amount of natural talents with which he may be endowed.

Perhaps no instrument offers such a temptation to triflers as the Organ, for the obvious reason that an immense variety of tone can be produced on it by merely mechanical means. Hence it is of the utmost importance that the student should take his first steps in the right direction. The Author has endeavored to place the true principles of organ-playing before the beginner, and he hopes he has done so in a manner not uninteresting or discouraging.

He takes this opportunity of acknowledging his obligations to the eminent organ-builder, Mr. Henry Willis, for much valuable assistance.

EDITOR'S PREFACE.

With the exception of a few minor details the work of Sir John Stainer remains the same. The new material in Parts I and II comprises the development of the Pneumatic and Electric Actions, with drawings from Key to Pallet, and, as far as possible, the latest inventions have been described.

In Part III little has been done except the grouping of 4-foot and 2-foot stops under the correct heading of Foundation stops, and, where stops are known by two different names, the old and the new terms are given for completeness.

A list of stops for the Solo and Echo or Celestial Organs, with the character of tone of each stop, together with a complete list of Couplers to be found on Modern Organs, have been added. The section "Hints on Organ Accompaniment" for the church service is not intended to be a complete guide to this important subject, but to serve merely as an introduction to a fascinating and almost endless study.

A few supplementary Pedal Studies have been added, including the changing from toe to heel of the same foot on one note, *glissando* on the sharp keys, octave work, double pedal, and chord playing.

I have thought it advisable not to add any exercises for the manuals, because of the vast amount of good music written specially for the organ. A judicious selection from modern organ music will not only develop the pupil's facility at the keyboard, but be the means of giving him a repertoire at the same time. Two pieces are introduced at the end of the work; the first to illustrate rapid changes from one manual to another, and the second to illustrate the playing upon two manuals with one hand.

The fingering has been altered to the so-called "Continental" fingering, and the pedal signs simplified.

In a number of cases new and improved illustrations have been used, and at the end of the book will be found a list of musical literature of value to the Church Musician.

Thanks are due to Mr. H. M. Riegel for assistance in compiling the above-mentioned list, and to the firm of J. H. and C. S. Odell & Co., for the use of drawings (registered at the Patent Office) of Pneumatic and Electric Actions.

F. Flaxington Harker.

New York, January, 1909.

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THE ORGAN.

PART I.

A SHORT SKETCH OF THE HISTORY OF THE ORGAN.

Ancient Flutes.

The history of the organ is nothing more than a narrative of the efforts made by men to bring under the control of one performer a large number of the instruments called flutes.

The particular sort of pipe or flute the use of which led eventually to the construction of an organ, was the *flûte à bec* or *beak-flute ;* that is to say, a pipe with a mouthpiece which was placed against the lips for the purpose of receiving the breath of the player.

A penny whistle (tin or wood) is probably a very familiar instrument to our readers, and is a veritable specimen of a *flûte à bec*. The now almost obsolete *flageolet* is also of the same family.

How little difference there is between a penny whistle and an organ-pipe can be seen by the accompanying illustrations :

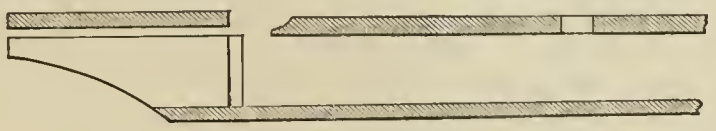


Fig. 1.

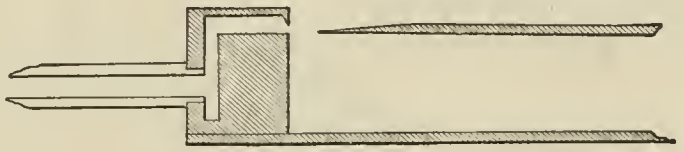


Fig. 2.

When a flute was so constructed that it was blown at a hole in the side, like our modern orchestral instrument or ordinary flute, it was termed a *flauto traverso* or "flute held sideways." (Fig. 3.)

Fig. 3.

It would, of course, not be possible for a performer to play more than one *flauto traverso* at a time; all the efforts of musicians were therefore concentrated on bringing several *flûtes à bec* under control.

It was very soon found that *two* such instruments could easily be played by one person. This seems to have been known to almost all ancient nations. The figure below is from an Egyptian monument.

Fig. 4.

The old-fashioned "double flageolet" is a real ancient "double flute," although the tubes are, for convenience' sake, brought closer together than was the case in the older instruments. The pretty effect of the two-part harmony of the "double flute" urged men on towards the construction of an organ.

Flutes on a Box of Wind.

The next step in organ-building was to place several flutes on end over a *box of wind*, supplied not by human lungs, but by *bellows*. This is well illustrated by a figure copied from Kircher's "Musurgia."

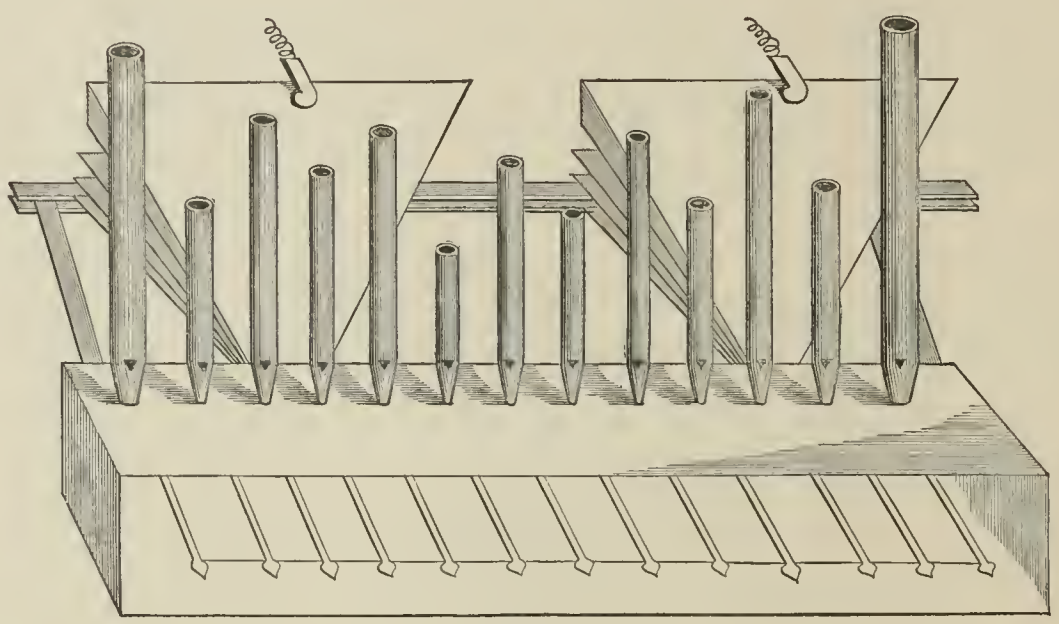


Fig. 5.

The pipes in the above instrument (Fig. 5) were made to speak or be silent at the will of the player, by pulling backwards or forwards pieces of wood, the ends of which either closed up the foot of a pipe or allowed the wind to enter it.

As the number of pipes increased, the number of blowers necessarily became larger. The following illustration from a Saxon Psalter exhibits this:

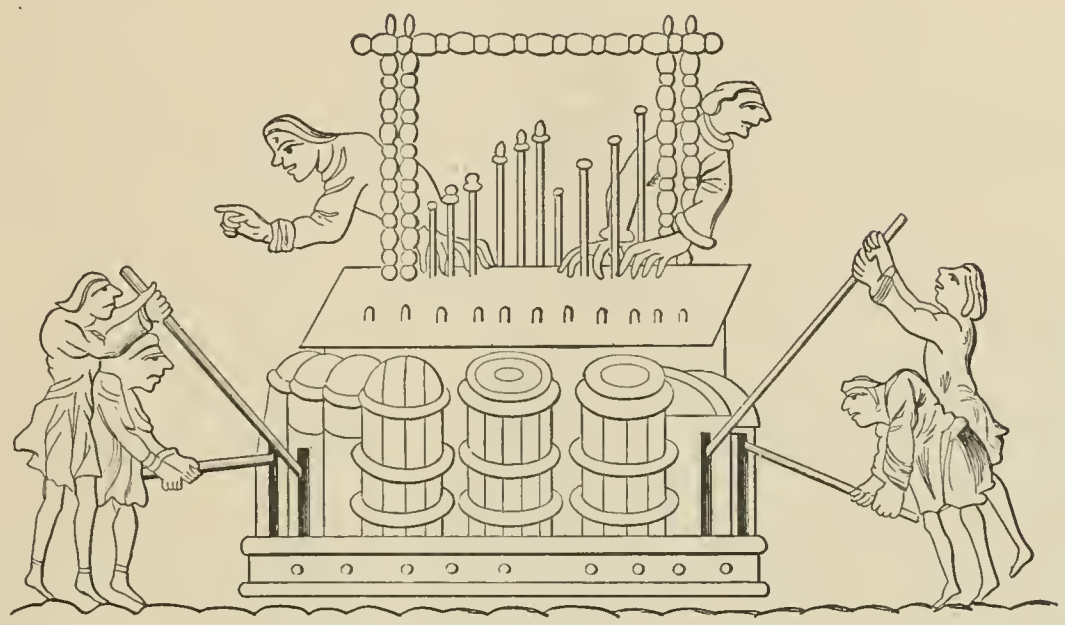


Fig. 6.

Bellows in those times were of very primitive form, in fact not in any way superior to a common blacksmith's bellows as used to this day in the forge.

Men soon discovered that the weight of the body might with advantage relieve the muscles of the arm of the laborious duty of constant pumping. They constructed bellows of such form that men could stand on them. The following was found on the Theodosian Obelisk at Constantinople:

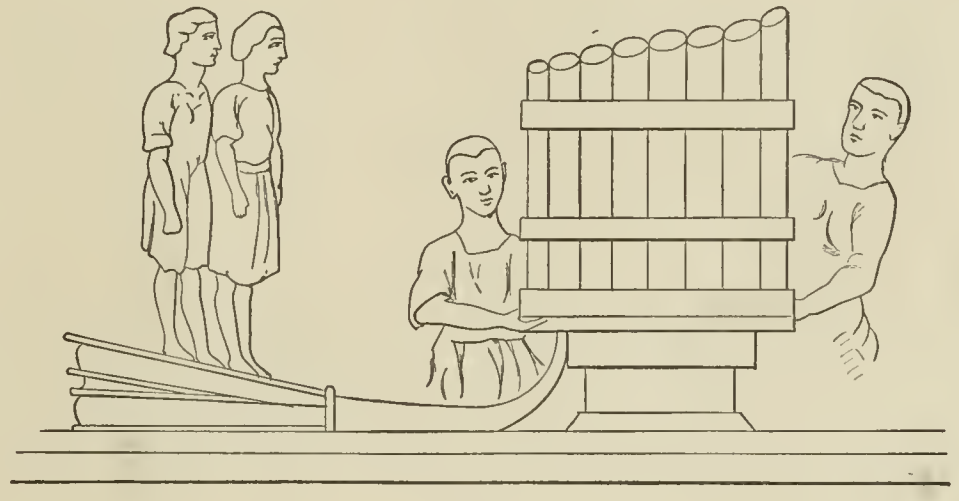


Fig. 7.

Hence, the blower was often called the "bellows-treader" (*Balgentreter*). This system of blowing has lasted up to the present time, and those who have any curiosity on this subject will still find in many continental churches, in some dark corner, a man busily engaged in mounting on first one and then another of several sets of feeders, and forcing the air into the bellows by his weight, as if he were undergoing punishment at a musical treadmill.

Reed- and Flute-Pipes.

The flutes hitherto spoken of have been those in which the tone is produced by forcing air against a sharp edge of wood or metal called the "lip," and by this means setting the column of air inside into vibration. But the word flute or pipe anciently included a pipe of very different construction, namely, a *reed-pipe* — that is, a pipe in which a tongue of metal or wood is so placed that, as air is blown into the tube, the tongue, partly barring its passage, beats backwards and forwards, and by its vibration sets the column of air inside the tube into synchronous vibration. The examination of an oboe or bassoon will make the action of a reed quite clear. Thus it has come to pass that to this day these two classes of "flutes" or pipes are found in organs; those corresponding to the common whistle family being called *flue*-pipes, while those of the oboe type are called *reed*-pipes.

Keys for the Hands.

The next step in organ-making was the invention of the *clavier* or *keyboard*, about the close of the eleventh century. At first keys were of the most clumsy description (Fig. 8), so large and broad that nothing short of a blow from the clenched fist could act upon the leverage. Hence in these early times the player was called an organ-beater (*pulsator organorum*). It is recorded that the interval of a fifth occupied about the same space as an octave in our modern instruments.

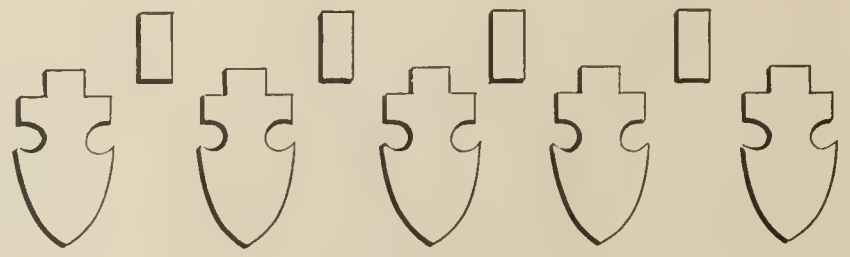


Fig. 8.

Then little by little the keys were improved in shape until they became much like our modern keys, the only difference between them being that the old sets were much shorter (from back to front), and the sharp keys were *white* and the natural keys were *black*, the reverse of our modern colors.

Keys for the Feet.

The invention of pedals or keys for the feet, early in the fifteenth century, was probably the most important step ever made in organ-building. It is unnecessary to say here how grand and thrilling is the effect of the tone of those enormous pipes thus placed under the command of the performer, or how the independent use of the pedals gives the organist a source of harmony not possessed by any other instrument.

Pedal-keys seem to have been quickly brought to a considerable degree of perfection in Germany, where their compass soon reached or even exceeded two octaves. But in England the introduction of pedal-boards of full compass was extremely tardy; indeed, it may be said not to have commenced until the beginning of the nineteenth century.

Sliders.

When only one row of pipes was placed over the box of wind the mechanism of an organ was simple enough, because each key pulled down a sort of pallet or piece of wood covered with leather placed under the foot of each pipe. As long as the key was held *down* the air rushed through the hole into the pipe and made it speak, but as soon as the key was allowed to return to its position the pallet returned by means of a spring to *its* place below the pipe and shut off the supply of wind.

But it was discovered that if a thin slip of wood be placed (running from *right* to *left*) under the row of pipes, having perforations corresponding to the holes in which the pipes stand, the *whole row* of pipes could be made silent by shifting this sliding piece of wood either to the right or left so far that the perforations no longer corresponded with the holes in which the pipes stood. Even when the keys are pressed down, no sound will be produced until this sliding slip, or slider, is moved into such a position that its perforations are exactly under the feet of the pipes.

These sliders are now acted upon by levers called *stops*, and it is by their means that several rows of pipes of different qualities of tone, and also of different pitch, can be placed over the same box of wind and yet be selected at will by the performer.

Two or More Rows of Keys.

The admirable capabilities of the organ for supporting vocal music, and the solemn dignity of its character, have always led to its association with divine worship. But the broad and strong qualities of tone found useful for sustaining the voices of a large congregation were not found delicate enough for the accompaniment of a highly trained choir either when singing individually or in a body. Hence the construction of an independent organ of soft and delicate tone called the *Choir* Organ, the keys of which were placed either immediately above or below the louder organ, to which latter was given the name of Great Organ. The keys of the Choir

Gerrit de Jong, Jr.

Organ are more often below those of the Great Organ than above, and the pipes of the former are often, especially in cathedrals, placed on brackets projecting over the screen behind the player's back. In such cases the mechanism connecting the keys with the pallets and pipes had to pass below the organist's feet, under the pedal keys, and it was called in German a *Rückpositiv*.

Two sorts of small organs had been in public and private use, namely, the *Portatif* or "portable organ," so called because it could be carried about in processions, and the *Positif* or "organ in position," so named in contradistinction, under the impression that it was *not* portable.

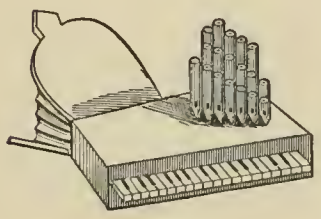


Fig. 9.
Portatif Organ.

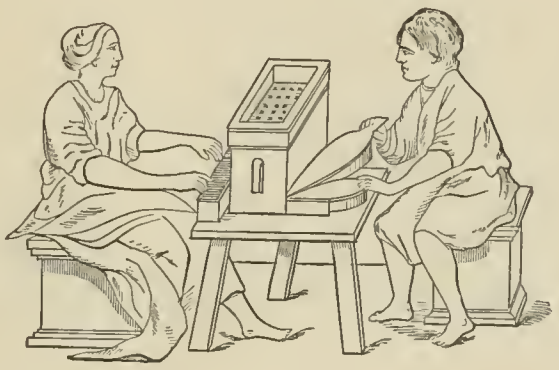


Fig. 10.
Portatif Organ.

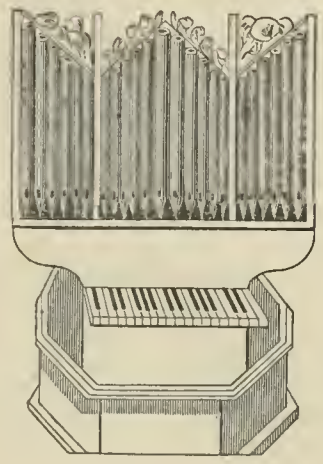


Fig. 11.
Positif Organ.

But, as a matter of fact, these *positifs* or "organs in position" were sufficiently portable to be moved from place to place with comparative ease, although they were really larger than the *portatifs*.

Organ-builders found in these soft sweet-toned *positifs* an excellent model for the organ required for choir accompaniment. Hence Choir Organs were not only built with the same sort of tone and of much the same dimensions as *positifs*, but were actually called *positifs*, a name which they bear to this day in France and Germany.

The "Echo Organ" was a small organ, often of limited compass, the pipes of which were shut up in a box and placed at a distance from the rest of the instrument. Echo Organs are sometimes made now. In most instruments their place is taken by the "Swell." The gradual alteration of an "Echo" into a "Swell" organ was, like many other vast improvements in organ-building, due to English workers. Abraham Jordan, in the year 1712, made the front of an echo-organ box to move up and down in grooves at the side like a window-sash. The mechanism for raising the front board or shutter was of a very unwieldly character, and the pedal which set it in motion offered great resistance to the foot. It also happened frequently, that on permitting the shutter to return to its place (by raising the pedal), this heavy panel of wood ran down with an unpleasantly loud bang. This old form was called a "nag's-head" swell. But this method of obtaining a "swelling organ," as it was called, was in time superseded by a set of overlapping shutters known as the "Venetian" swell, so called because of its similarity to a common outdoor blind.

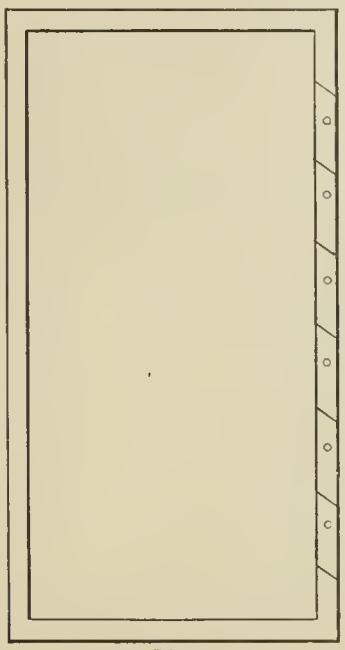


Fig. 12.

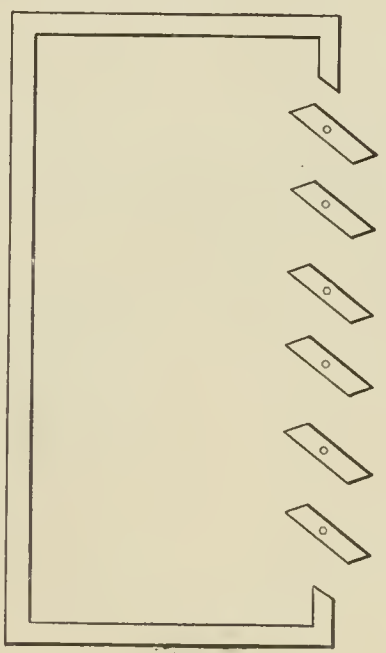


Fig. 13.

It is quite impossible to arrange an account of all the improvements in organ-building in chronological order. Progress and inventions overlapped each other, and very often the results of successful experiments were not generally known and utilized till long after their first discovery.

Horizontal Bellows.

It is, however, quite certain that no great advance in the construction of the instrument was possible until the bellows was improved. This portion of the mechanism is of as vital importance to an organ as are lungs to a human being; as long, therefore, as no better means of supplying an organ with wind than the simple forge-bellows was known, progress was completely barred. The faults of such old bellows must be known to all. As the handle is pressed down and the bellows is made to fill, all the pressure which the top of the bellows exerted is negatived. If *one* such bellows supplied an organ, the player would be compelled to take his hands off the keys on each occasion on which it was being filled. If the reader cannot quite understand this account of the defects of the old forge or "diagonal" bellows, he can easily make an experiment which will fully explain what has been said; let him take a common kitchen-fire bellows and insert the mouthpiece of a penny whistle into its orifice, and bind both round with leather so that the air passing from the bellows must enter the whistle, and then let him ask a friend to blow while he plays tunes. The defects of diagonal bellows will no longer be doubted.

Nor were these faults remedied by having a large number of such bellows and then supplying the organ only from those which were full; because, when a bellows of this kind is full, the weight of the top and sides is spread over the whole atmospheric contents, but as the air becomes exhausted this weight remains equal while the contents grow less; the *pressure* of the outgoing air is therefore increased.

Two improvements made towards the close of the eighteenth century, by Green, remedied all these shortcomings. The old diagonal bellows was made into a feeder, and had another bellows placed over it, so that the two together formed a *feeder* and sort of *reservoir*. A peep at the bellows of a modern organ will show that the pressure of wind, for obvious reasons, does not vary with the movement of the feeder. The modern bellows are termed *horizontal*, to distinguish them from their forerunners.

One other improvement only was needed to make the bellows perfect. It was necessary to remedy the defect before alluded to, namely, the inequality of the pressure as the top fell. This was ingeniously done by making one fold of the bellows turn *outwards* while the other turned *inwards*. This arrangement of the folds can be clearly seen in the next illustration.

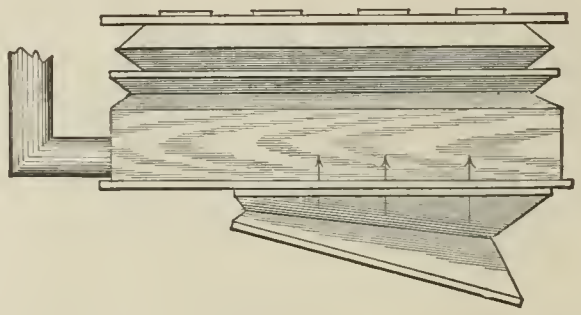


Fig. 14.

The *counter-balances* are pieces of iron attached to the upper, middle, and bottom boards of bellows for the purpose of making *a* and *b*, Fig. 15, open equally. Their use is a marked improvement in organ-constuction.

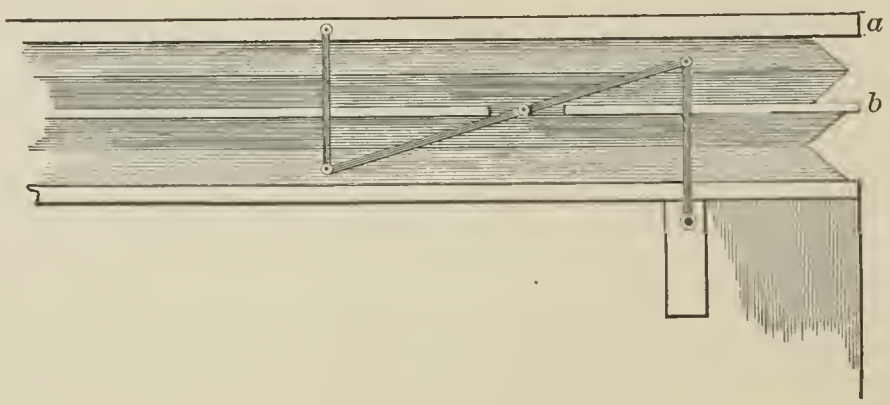


Fig. 15.

Concussion Bellows.

In old organs it was found that the simultaneous sounding of several of the large pipes on the manuals caused a "jumpy" and unsteady effect — a sure sign that the equality of pressure was disturbed, first by the sudden demand on the resources of the wind-chest, next by the rush of air to take the place of that already used. The accompanying ingenious invention of Bishop, the organ-builder, entirely removed this. He placed a small single bellows (*a b*) against the wind-trunk near the soundboard, the outer side of which was balanced by a spring (*c*). When a sudden demand is made upon the wind and the pressure is consequently reduced, this spring (*c*) by proportionately forcing in the side of the bellows (*d*) counteracts the defect. These little bellows are called "concussion-bellows."

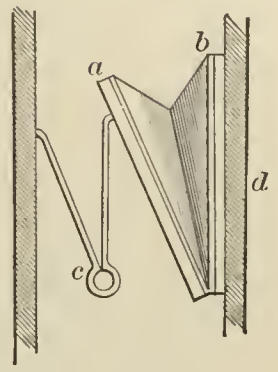


Fig. 16.

Composition Pedals and Combination Pistons.

The player had still to contend with the serious inconvenience of being compelled to make any alterations in the arrangement of the stops by drawing them in or out *with his hands*. A great boon was therefore conferred upon organists by the introduction of small iron pedals placed within easy reach of the feet, which by a system of leverage could draw out certain groups of stops. This method of changing stops has been vastly improved upon by Mr. Henry Willis, who, after many years of patient study, perfected a system of "combination pistons." They are small round ivory or brass buttons placed on the flat strips of wood between the manuals. When pressed with the thumb or any available finger of the performer, these pistons act upon little bellows of compressed air which, as they expand, push groups of stops in or out by appropriate leverage. The convenience of this clever mechanical contrivance cannot be overrated.

The system of arranging sets of stops on different soundboards and giving the organist little pedals, by the forcing down of which the air is cut off from the different sets of stops, is known as the "ventil system." Those who are best competent to judge of its worth are convinced that it is inferior both to "composition pedals" and "combination pistons," and it is to be regretted that in certain quarters an attempt is being made to reintroduce it under the false notion that because it is still in existence in some parts of the Continent it is therefore superior to the latest inventions of English builders.

Pneumatic Lever.

Perhaps nothing tended to prevent the organ from being a popular or generally attractive instrument to students so much as the extreme weight or "stiffness" of the touch. For the remarkable invention which removed this disagreeable part of an organist's labor an Englishman also has to be credited. Mr. Barker, about the year 1832, made a small bellows for each manual key, so arranged and constructed that when a key was pressed down the compressed air raised the top of the bellows. To the top of this bellows was attached the weight of the whole action to the pallet. When the manual key was allowed to rise, the little bellows was emptied through a waste valve and fell into its position of rest. The fingers of organists have, therefore, in these days only to move the small pallet or valve which admits compressed air into the pneumatic bellows, and thus are able to throw on to these active little supporters the labor of working all those numerous portions of mechanism which reach up to the pallet in the wind-chest. One of the most important advantages of the pneumatic lever is that ciphering is much less frequent. This fact is thus accounted for: When no pneumatic lever is used, the organ-builder strives to render his touch light by reducing the strength of his springs to a minimum; any change in the weather or other disturbing influence is liable, therefore, to make the springs unable to do their duty, and a cipher is the result. Whereas, when the pneumatic lever is attached to an organ, the builder, having no scruples as to the work he is giving to his compressed air, strengthens his springs and thus prevents accidents.

Improvements in Organ-Pipes.

The variety of tone produced by modern organ-builders is extraordinary. The discovery by French builders that organ-pipes, made twice their proper length and perforated with a small hole in the middle of the tube, produced a fine rich tone, has led to the universal adoption of "harmonic" stops, as they are called; simultaneously with this a high pressure of wind has been applied to many important stops, both "reed" and

"flue" (and especially to "harmonic" stops), thereby adding largely not only to the varieties of tone of which the instrument is capable, but also to the grandeur and sublimity of its full power.

There are those who claim great antiquity not only for a simply constructed instrument, but also for organs of a complicated structure. Thus the *magrepha*, though not mentioned in the Bible, is described in the Talmud as an organ with ten keys and ten pipes to each key, of very powerful tone, used in the Temple of Jerusalem.* Other authors assert that organs with four, six, or eight stops were in use before the Christian era.† But the term *organ* is so very generally applicable in its meaning of *an appliance* or *mechanical contrivance* that it cannot be a matter for surprise that it has, from time to time, been applied to musical instruments differing from each other not only in capabilities but in structure. The word *organ* as used in the Bible for a translation of *ugab* or *huggab* must not be thought to imply any complicated or large instrument.‡

The expression a "pair of organs," found in old writers, merely signifies a complete set of pipes, just as we still say "a pair of stairs," etc.

* See Engel's "Music of the Most Ancient Nations."

† See Chappell's "History of Music."

‡ See articles in Cassell's "Bible Educator."

ADDENDA TO PART I.

Pneumatic and Electric Actions.

In the year 1827, Mr. Joseph Booth built an organ at Sheffield, England, placing the bass pipes of the Open Diapason on a separate sound-board, with "puff-valves" or small round bellows attached to each pallet. These "puff-valves" were acted on by heavy wind carried in conveyances from the Great Organ, and, as they expanded downwards, they opened the pallets.

Another very important invention was the pneumatic lever, already mentioned, and invented by Mr. Barker. Up to this time an organist was often taxed to his utmost strength when playing the full organ. In order to relieve the organist of this physical strain, the inventor put under each key a small bellows, which, with the aid of compressed air, made the touch much lighter. It was rejected by every English organ-builder, but finally offered to, and accepted by, A. Cavaillé-Coll of Paris. This invention was first used with success in the magnificent instrument built for the Abbey Church of St.-Denis, near Paris, in 1841.

Tubular Pneumatic Action.

Various claims have been made by writers that Moitessier, the French organ-builder, invented Tubular Pneumatics about the year 1835, but no record is to be found until 1847. It may be added that he used this action in the large instrument he built for the Church of La Dalbade, Toulouse, in 1850 (? 1847 [Fétis]).

These inventions were afterwards introduced by English and American builders, and used in combination, which revolutionized in a marvellous degree the whole art of organ-building. In the Tubular Pneumatic system pliable leaden tubes with compressed air take the place of trackers. The action is almost noiseless, and is particularly desirable when the organ is to be very large, or when there are a great number of couplers and combination pistons. It may be mentioned that the pneumatic action has been applied successfully to the draw-stops.

Electric Action.

Dr. H. J. Gauntlett of London, who did so much towards introducing the CC compass in England, now used in every country, is generally admitted to have been the first to apply electricity to the mechanism of the organ. Since the year 1852, when electricity was first used, various builders have improved and combined the electric and pneumatic systems. An advantage of this action is, that an organist may have a movable key-desk, and is thus enabled to get better work from his choir, besides hearing his instrument from a distance. The key-desk controls the organ through a flexible cable of insulated wires.

Mention should be made of Mr. H. L. Roosevelt, of New York, who made a world-wide reputation with the organs he built for the Cathedral at Garden City in 1880, and Grace Church, New York. In both these churches the organs are divided and placed in different parts of the building and connected by electricity. His name will also be remembered by the invention of sliderless soundboards and a wonderful system of adjustable combination actions.

Adjustable Combination Action.

Mr. H. L. Roosevelt, of New York, was the first organ-builder to patent and introduce with success the adjustable combination action. This enables the player to fix any combination of stops his fancy may suggest and place them under the direct control of either a thumb-piston, which is placed under each manual, or by the usual pedal. When thumb-pistons are used, a series of small vertical levers will be found on the right and left side of the keyboards and above the registers. These levers are named and represent the stops, while the different rows are numbered like and correspond with the numbers on the thumb-pistons.

The couplers and pedal stops are also controlled by this invention; and it is important, in that registers cannot remain partially drawn. Another advantage is that the stops are so changed that the state of the organ may be ascertained at a glance.

Reversible Pedals or Pistons.

In modern organs double-acting Pedals or Pistons are provided to control the Great to Pedal Coupler, Tremulant, and other mechanical appliances. The first touch brings on the coupler, while a second touch throws it off.

Tremulant.

The date of the introduction of the Tremulant or Tremolant is uncertain, but a stop of similar action was used by Dallam, in 1606, for King's College Chapel, Cambridge, England, called a "shaking stoppe." The modern mechanical apparatus causes the air which goes to the pipes to pass through a valve with a movable top, to which are attached a spring and weight. The vibrating of the top of this valve causes the *tremolo* effect in the sound produced.

Automatic Suitable Bass.

In the words of the inventor: "The control of the pedal organ always presented difficulty until solved by the Hope-Jones automatic 'suitable bass' tablet (1889). One of these is placed on the centre of each manual.

"When desiring to play on the great organ, the organist will touch the suitable bass tablet on that manual. By means of a catch, it remains in its active position and releases any of the other suitable bass tablets that may previously have been in use. The organist may now play upon his great organ, freely altering the stops and couplers, either by hand or composition movement, and may rely upon the pedal organ stops and couplers automatically moving in or out, so as to maintain a pedal bass suited to the combination in use at the moment.

"If now he passes to the Swell manual he will touch its suitable bass tablet. Instantly the Great suitable bass tablet will be released, the Great to Pedal coupler will go in, the Swell to Pedal coupler will come out, and the speaking stops will so group themselves as to provide a bass that is suitable to the stops in use on the Swell manual. If he now plays upon the Choir organ a touch on its suitable bass tablet will liberate that on the Swell manual, the Swell to Pedal coupler will thereupon go in, the Choir to Pedal coupler will come out, and the pedal stop keys will move themselves to provide a suitable bass for the Choir organ. Should the organist now add the Swell to Choir coupler, the Swell to Pedal coupler will immediately come out of its own accord, etc., etc.

"By the above device the organist is relieved of all thought and trouble in connection with his pedal organ and need no longer keep a watchful eye on that bugbear, the Great to Pedal coupler.

"Each of the composition keys or pistons is fitted with a double touch. An unusually hard push will not only move the speaking stops in the regular way, but will also operate the suitable bass tablet of the man-

ual to which it applies, thus in many cases saving the organist the trouble of touching the suitable bass tablet as he passes to a fresh keyboard.

"An independent pedal stud is provided for releasing all the suitable bass tablets, so leaving the pedal stops and couplers free to be actuated by hand."

The Austin Universal Air Chest.

An important invention is the Universal Air Chest, patented in 1894 by J. T. Austin. With the exception of the key-action, all the mechanism of the organ is contained in this Air Chest, which is like a small room, but of course, varies according to the size of the organ. It is entered by air-tight doors, and all the mechanism may be seen and adjusted if necessary while the instrument is in actual use, without removing any of the parts or displacing any of the pipes. On one side of the Chest is the reservoir, which moves horizontally and is balanced with springs to the required pressure. The pipes are supplied direct from the Air Chest, and it is claimed that, whether one or more stops may be in use, the wind-supply is always uniform.

Stop Switch.

An invention of Mr. Robt. Hope-Jones is the Stop Switch, by means of which the action of the Stop-keys may be suspended while a new registration is being prepared.

When finishing one movement of a piece, the organist may touch the Stop Switch, and the organ will remain as it is while he prepares, as opportunity offers, new combinations for the following movement.

When ready to begin the succeeding movement, he can touch the Stop Switch once more and instantly bring his new combinations into use.

This contrivance consists of one electric contact by means of which the electricity from the battery is connected with the Stop-keys.

Crescendo Pedal.

The Crescendo Pedal is situated close to the balanced Swell-pedal, and, on being depressed, gives a gradual *crescendo* from the softest stop to the full organ. By a reverse movement a *decrescendo* is obtained. This pedal acts on all the couplers, and in some cases on the Swell-pedal in addition.

Double Touch.

One of the most wonderful inventions of modern times is the application of double or second touch to the manuals. The usual touch remains the same, but if extra pressure is used, the key will fall about a sixteenth of an inch further, thereby giving another combination and making it easy to bring into prominence an inner melody. Double Touch was invented by Mustel (Paris), and afterwards adapted to the modern organ by R. Hope-Jones.

Stop-Keys, or Tilting Tablets.

The usual stops at the sides of the manuals are being replaced, in many instances, by tablets or stop-keys, invented by R. Hope-Jones in 1886, which are located above the upper keyboard and immediately below the music-desk. These tablets are about two inches long, pivotted through the centre, and arranged so that to touch the upper end brings on the stop, while a touch at the lower end of the tablet silences it. In many organs the couplers are grouped and placed above the respective manuals which they affect.

Melodic Coupler.

Among recent inventions, the Melodic Coupler invented by Thomas Casson is a wonderful and useful appliance. By its use an organist may play on the Great organ with both hands in harmony, and the Solo manual (to which it may be adapted) will also sound the melody.

Duplex Chest Action.

By means of a Duplex Chest, stops are transferable from one manual to another, and thus from a small instrument one may obtain a great variety of effects. Swell stops may be transferred to the Great manual by having a duplicate set of the Swell registers placed with the Great organ stops, and the Great organ registers may be used on the Swell manual by a similar addition to the Swell stops.

Inclined Manuals.

The great distance between manuals is an inconvenience to the performer of modern organ music, which often demands the playing on two manuals with one hand at the same time. A step in the right direction was when builders placed the manuals closer together, and now, slightly inclined manuals have been introduced, which further lessens the distance between the keyboards. By these improvements it is easy for the organist to sustain notes with the fingers upon one keyboard, while with the thumb of the same hand he plays independent melodies on the keyboard below.

Spherical Pedal-Board.

The latest invention in pedal-boards is one called the Spherical. It has the usual radiation with the concavity each way, enabling the organist to reach any note without awkward motions. The first one to be introduced was in the Beecher Memorial organ at Elmira, N. Y.

PART II.

SHORT EXPLANATION OF THE CONSTRUCTION OF AN ORGAN.

Much as to the nature of the mechanical structure of an organ must have been gathered from the historical sketch just given, but the following concise account will perhaps place the whole more clearly before the reader.

The most important fact to be first grasped is, that an organ with independent pedals and two or more manuals is simply *several* organs of almost identical structure brought together so as to be conveniently under the control of one performer.

If, then, the mechanism from key to pipes is once explained, the same explanation will apply equally to each row of keys and to the separate pedal organ.

Tracker Action from Key to Pallet.

Let us start from the manual-keys, looking at Fig. 17 at each step.

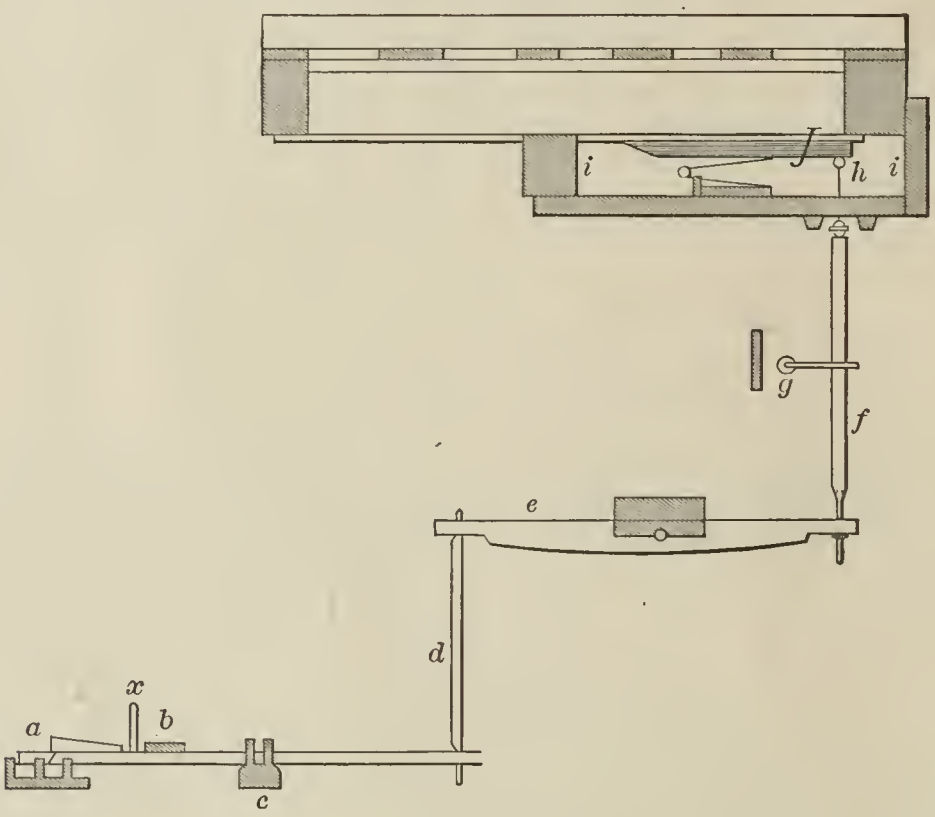


Fig. 17.

A key is a lever, the front portion of which is exposed to view (*a*). Just behind the ornamental strip of wood (*x*) forming a band between each manual is placed a weighted piece of wood lying across the whole range of keys from side to side, called the *thumping board* (*b*). Its duty is to keep the keys in position and resist any tendency they may have to rise unduly when released from the pressure of the finger. Under the keys a series of pins are arranged on a piece of wood forming the *pin-rail* (*c*). These pins fit easily into holes in the keys and prevent them from oscillating when moving up and down. On the end of the key, and kept in position by a little pin running into a hole in the key, is the *sticker* (*d*). The upper end of the sticker has also a little pin which passes into the end of a horizontally placed lever called a *backfall* (*e*). At the other end of the backfall is a hole through which passes the lower end of a *tracker* (*f*). Trackers may be of various lengths according to the size and position of the instrument. The little wire passing from the end of the tracker into the hole in the backfall is made like a screw, or *tapped*, as it is termed; so, where it appears below the backfall, a little leather *button* can be screwed on to it. Two purposes are answered by these buttons; they prevent the tracker from jumping out of position, and they enable the builder to *regulate* the length of the tracker by twisting the button to the right or left. If trackers are very long indeed, they are made to pass through one or more perforated pieces of wood, each tracker having one hole to pass through. These contri-

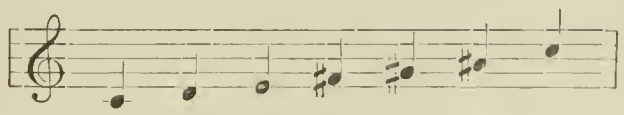
vances are called *registers* (*g*), and their object is to prevent the trackers from knocking against each other and making a rattling noise.

It will appear from the diagram that the upper end of the tracker is fastened to a *pull-down* (*h*) or piece of wire, one end of which passes out of a small hole in the wind-chest (*i i*), while the other is fastened to the bottom of the *pallet* (*j*). This has been purposely done to give the younger reader a general idea that the key pushes sticker, sticker raises front of backfall and at the same time forces down the further end of backfall, backfall pulls tracker, tracker pulls pull-down, pull-down pulls down (as its name implies) pallet, pallet allows wind to rush up to pipe.

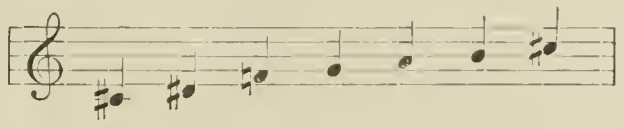
But as a matter of fact the pipes are not arranged all of a row, beginning with the smallest on the right-hand side, ending with the largest at the left-hand side. If pipes were so arranged in large organs, not only would they present a very ugly appearance, but all the weight would rest on one side; and also, as large pipes take much more room of course than small ones, the left-hand side of an organ would have to be of much greater depth. And again, if this arrangement of pipes were followed, the resources of the box of air, or wind-chest, would be taxed to the utmost on the left side where the big pipes were standing, while the other end would have to supply only tiny pipes. All these considerations have led organ-builders to place pipes alternately on either side, beginning with the largest:

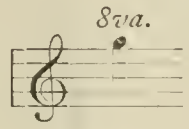
C, D, E, F♯, G♯, A♯, C, and so on, to the smallest; then back again, ending C♯, B, A, G, F, D♯, C♯.
(Largest pipes on left-hand side.) (Largest pipes on right-hand side.)

One is called the "C side," the other the "C♯ side." This accounts for the very unpleasant musical scale heard when a tuner is at work, because he tunes in this order on one side:



and in this order on the other:



If the organ had a compass to 

or g³, the little pipes in the centre would stand thus:

. . . . . C, D, E, F♯, G, F, D♯, C♯ . . . .

The note g³ would be produced by the smallest pipe, and the pipes would gradually increase in size up to the largest—on the left side to the C of lowest pitch, on the right to the C♯ of lowest pitch.

It is evident then that as the pipes do not stand in the same order as the keys, that is, by successive semitones, the action of the trackers will have to move sideways in order to get them under their respective pull-downs. This sideways movement is managed by what is called a *roller-board*. A glance at a roller-board in an organ will show its use and construction far better than any amount of verbal explanation. But it will be easily understood that if a series of little rollers (of wood or thin iron) be placed horizontally on an upright board, having at one end a jutting arm fastened to the tracker, and at the other end a similar jutting arm connected with the pull-down, when the tracker pulls one end of the roller the other end of the roller will move the "pull-down," and the pallet under the foot of the pipe will thus be opened.

From Bellows to Pipes.

Having shown how the movement of a key acts upon various levers until the pallet is pulled open, our next step will be to trace the progress of the wind from the time it enters the bellows until it reaches the pipe. If the reader can understand these two processes, which always go on simultaneously, namely, leverage from a key and at the same time progress of wind from the bellows, he will have grasped the true principles of the construction of an organ.

The attention of the reader is now called to Fig. 18. The bellows-handle, or whatever lever is employed in its place, moves the *feeder* (*f g*). Feeders are the lowest portion of the bellows, and are perforated with large holes (*c c*), closed inside by light coverings of leather hinged at one end (*d d*). When a feeder is moved down, the air from outside raises these light valves (*d d*) and fills it; but as the return movement of the handle raises the feeder, the air cannot get outside again owing to the

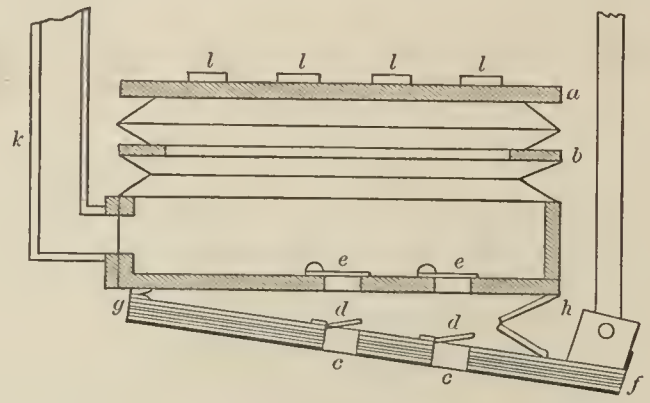


Fig. 18.

openings being covered up by which it entered; it therefore raises the valves in the reservoir (*e e*) above and enters in there. But the entry to the reservoir is closed by valves (*e e*) of similar construction to those which are placed in the bottom of the feeder; as soon therefore as the air has got into the reservoir and the feeder begins to go down for the second time, the valves in the reservoir fall over the opening and the wind is secured *inside the reservoir*. On the top of the reservoir are weights (*l l l l*) carefully adjusted, which make the air try to get out through the *trunk* (*k*) at the side. These trunks are sometimes of metal, more usually of wood, and convey the air into the *wind-chest*. The trunk guiding the wind from the bellows will be seen at *k* in Fig. 18. The following (Fig. 19) shows the action of double feeders; while one (*a*) is feeding the reservoir the other (*b*) is being refilled:

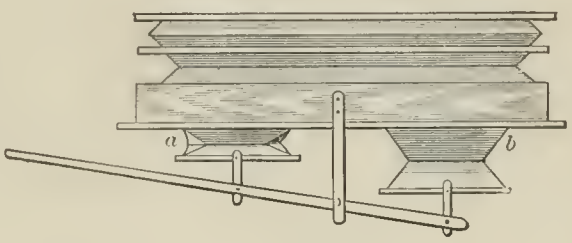


Fig. 19.

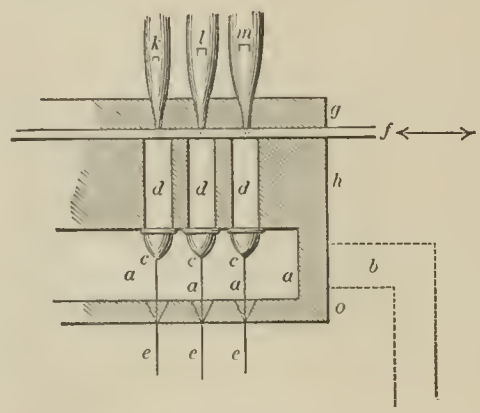


Fig. 20.

The junction of the wind-trunk to the wind-chest is shown by the dotted lines (*b*) in the next illustration (Fig. 20).

We have now traced the air into the wind-chest (*a a a a* in Fig. 20). It cannot go into the pipes at once because the *pallets* (*c c c*) stop the way.

When the action of the keys (just described on page 12) pulls down the pallets, the air makes a rush to get into the pipes through the *grooves* (*d d d*); and it will succeed in getting into the pipes if the *slider* (*f*) is open. The slider is a flat strip of thin wood which moves from left to right, or *vice versa*, lying between the top of the wind-chest and the soundboard (*g*) in which the pipes stand. The holes in the slider correspond exactly with the holes under the pipes. The slider is acted upon by the *stop*. When the stop is *in*, the slider is out of position and the air is arrested in its progress to the pipes by finding no orifice in the slider (*f*). But when the stop is *out*, the holes in the slider are under the holes leading to the pipes, and the air rushes into them and makes them speak. When, however, the key is allowed to return up to its position of rest, the pallet closes sharply and no more air can get to the pipe, whether the stop is in or out.

As it is often found difficult to explain the action of the slider to young persons, the following way of stating it may be of use. Take three strips of paper, two of white, one of black. Place the black strip between the two white, so that they coincide. Make a few holes through all of them (Fig. 21).

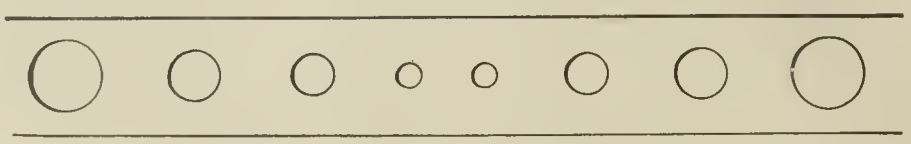


Fig. 21.

Place them on a table. Then the lowest strip of paper represents the top of wind-chest, the black strip the slider, the top strip the soundboard and holes in which the pipes stand. It will be evident that air could run through the holes in all the strips and enter the pipes if no further step be taken.

But now take hold of the black paper and give it a little pull to the right. The following (Fig. 22) will then be the appearance on the table:

Fig. 22.

It is very evident that, although there is an opening in the white papers, no pipe could now speak, because the black paper stops the progress of the air. This is exactly the nature and function of the slider. The stop when *out* makes all the holes coincide, as in Fig. 21; the stop when *in* makes the slider intervene, as in Fig. 22.

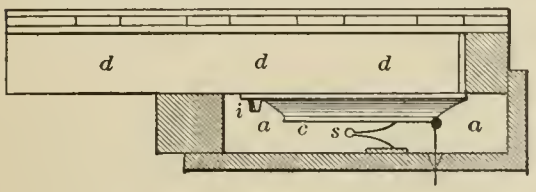


Fig. 23.

In Fig. 20 (at *c c c*) the pallet was shown only from the front; it will make its function clearer if we show it sideways, as in Fig. 23. The pulling of the wire opens the pallet, which is hinged at *i*, the air rushes therefore from *a a* into *d d d*, the groove. On releasing the key, the spring (*s*) instantly closes the pallet. The action which makes the stop-handle act on the slider is nothing more than a series of arms and levers; and as it is a portion of the mechanism most easily visible when looking inside the instrument, it is unnecessary to say more about it here.

Couplers.

Couplers are of two kinds, manual couplers and pedal couplers; by the former, one of two rows of keys is so connected to another that when that one is being played the other also is acted upon at the same time; by the latter, when the feet are playing on the pedals, the lower notes of a manual are simultaneously acted upon. The most simple couplers are those which act upon one of two successive rows, such for instance as "Swell to Great," which signifies that when this stop is drawn and the Great Organ is being played the Swell is simultaneously acted upon. The coupler formerly most commonly used can be thus explained. The backs of the keys are cut away—that of the upper set at the under side, that of the lower at the upper side (Fig. 24). A piece of wood is pierced with holes and made into a frame for the little flatheaded stickers shown at *a* and *b*. When the coupler is *not* drawn out the stickers are all at *b*, where they cannot produce any effect; but when the coupler is drawn out, the rod and all the stickers are thrown into position at *a*, and therefore upon pressing the front of the lower key the end rises and pushes up the back of the upper key. But *backfall* couplers, that is to say, couplers formed by the use of levers (such as that represented by *e* in Fig. 17, p. 12), are now most frequently met with. The annexed diagram (Fig. 25) shows both manual and pedal couplers on

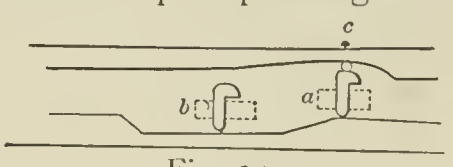


Fig. 24.

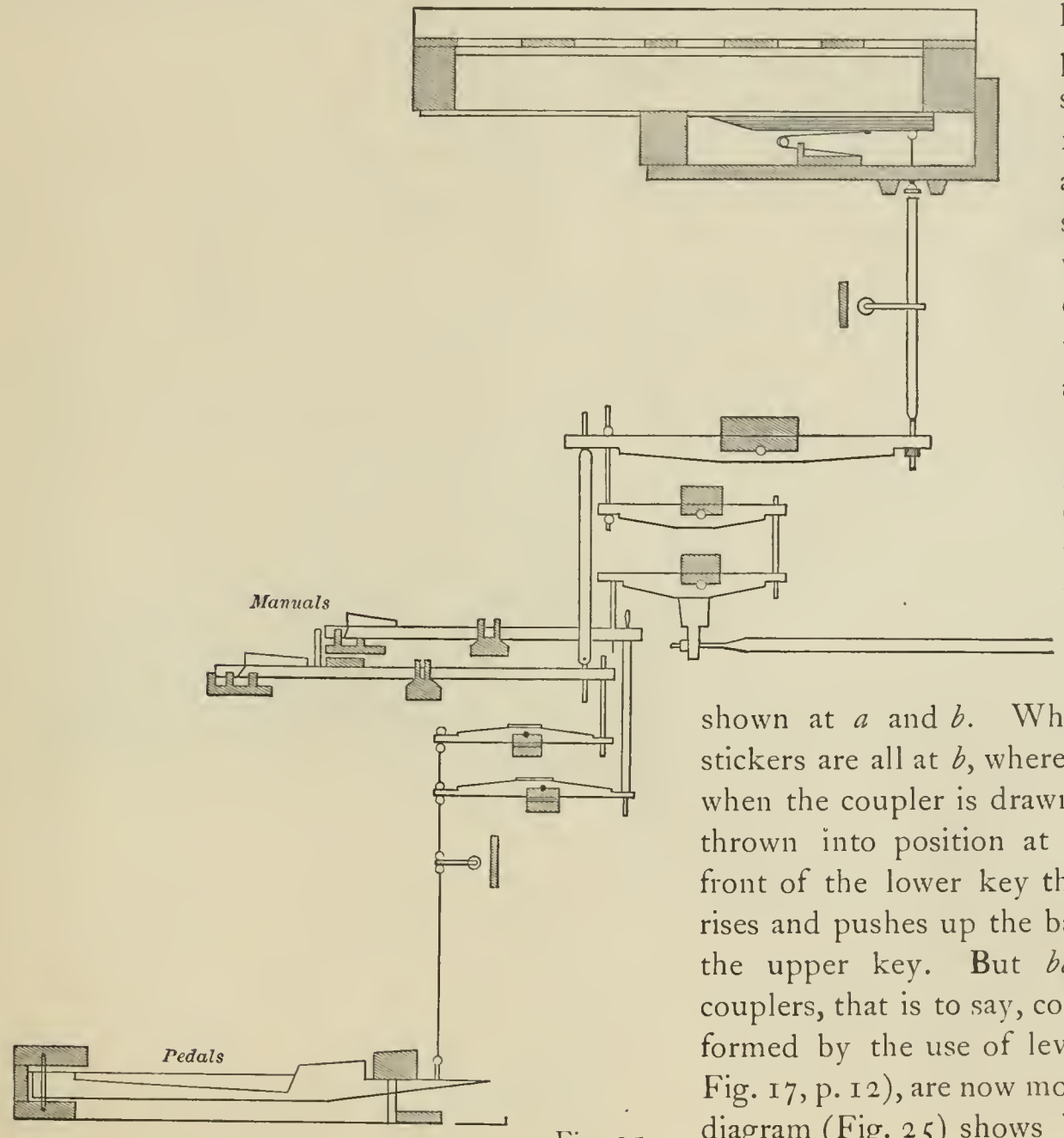


Fig. 25.

an organ of two manuals. Backfall couplers are thrown out of gear (when the stop is *in*) by a displacement of the backfall frame in such a manner that the wire of the sticker moves up and down without acting on the backfall. Pedal couplers, owing to the extent of the pedal-board being greater than that portion of the manuals on which they act, are constructed by means of a roller-board, or a backfall called a *splay* backfall, because the arms are not parallel to each other.

When couplers are drawn the touch of a large organ would be very heavy were it not for the pneumatic lever, for an explanation of which the reader is referred either to Hopkins' excellent work on the organ, or the article "Organ" in Stainer and Barrett's "Dictionary of Musical Terms."

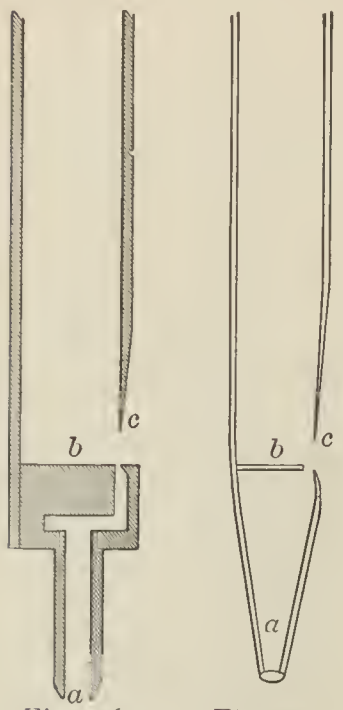


Fig. 26.

Fig. 27.

The construction of all the flue-pipes in an organ can be gathered from an examination of Figs. 26 and 27; for, although they differ in detail in a vast number of ways, the principle remains the same. The air enters the foot (*a*) or lowest portion, is arrested by a piece of wood or metal (*b*) called respectively the *block* or *languid* (a corruption of the Latin *lingua*), is forced to escape in such a way as to impinge upon the lip (*c*), and thus sets the column of air contained in the pipe into vibration.

It is not an easy matter to explain the construction of a reed-pipe either by words or illustrations. The student is recommended to ask an organ-tuner to take a reed-pipe to pieces and show how it is made. But to those who cannot thus see it with their own eyes, the easiest way to explain it, is to ask them to imagine an ordinary clarinet with the reed-end set in a foot or boot so constructed that the bottom of the foot could be placed on an organ soundboard and the upper part should fit tightly round the portion of the instrument just above the reed. On the admission of air from the bellows, it would have to pass by the reed of the clarinet to escape; the reed would then by its elasticity beat against the orifice just behind it, and so be set into vibration.

Tubular Pneumatic Action.

Fig. 28 is a drawing showing Tubular Pneumatic Action from key to pipe. The *key* (*a*) is connected by an *exhaust-valve* (*b*) with the *tube* (*c*), which in turn connects by the *passage* (*d*) with the *chamber* (*e*). The chamber (*e*) is divided from the *chamber* (*g*) by a soft leather called the *diaphragm* (*f*). When the key (*a*) is pressed, the exhaust-valve (*b*), is opened, allowing the air to escape from the chamber (*e*) through the passage (*d*) and the tube (*c*) to the outside. A reduction of pressure in the chamber (*e*) causes the air from the *wind-chest* (*m*), pressing on the under side of the diaphragm (*f*) in the chamber (*g*), to raise the said diaphragm (*f*) and lift the *valve* (*h*) off its seat on the adjustable *valve-casing* (*j*) to the *valve-seat* (*i*). Because of the air-pressure in the wind-chest (*m*) on the *pneumatic bellows* (*n*), the air is forced out of the bellows through the passage (*p*) and the valve-casing (*j*) to the outside.

As the *pneumatic-bellows* (*n*) collapses, it pulls down the *rod* (*o*), opening the *pallet* (*k*) and allowing the wind to escape through the *box* (*l*) into the pipe. When the key (*a*) is released, the valve (*b*) closes, and then the air is supplied again to the chamber (*e*) from the wind-chest (*m*) by means of a *leak-passage* (*d'*) through passage (*d*). The passage (*d*) contains a device for regulating the flow of air from the

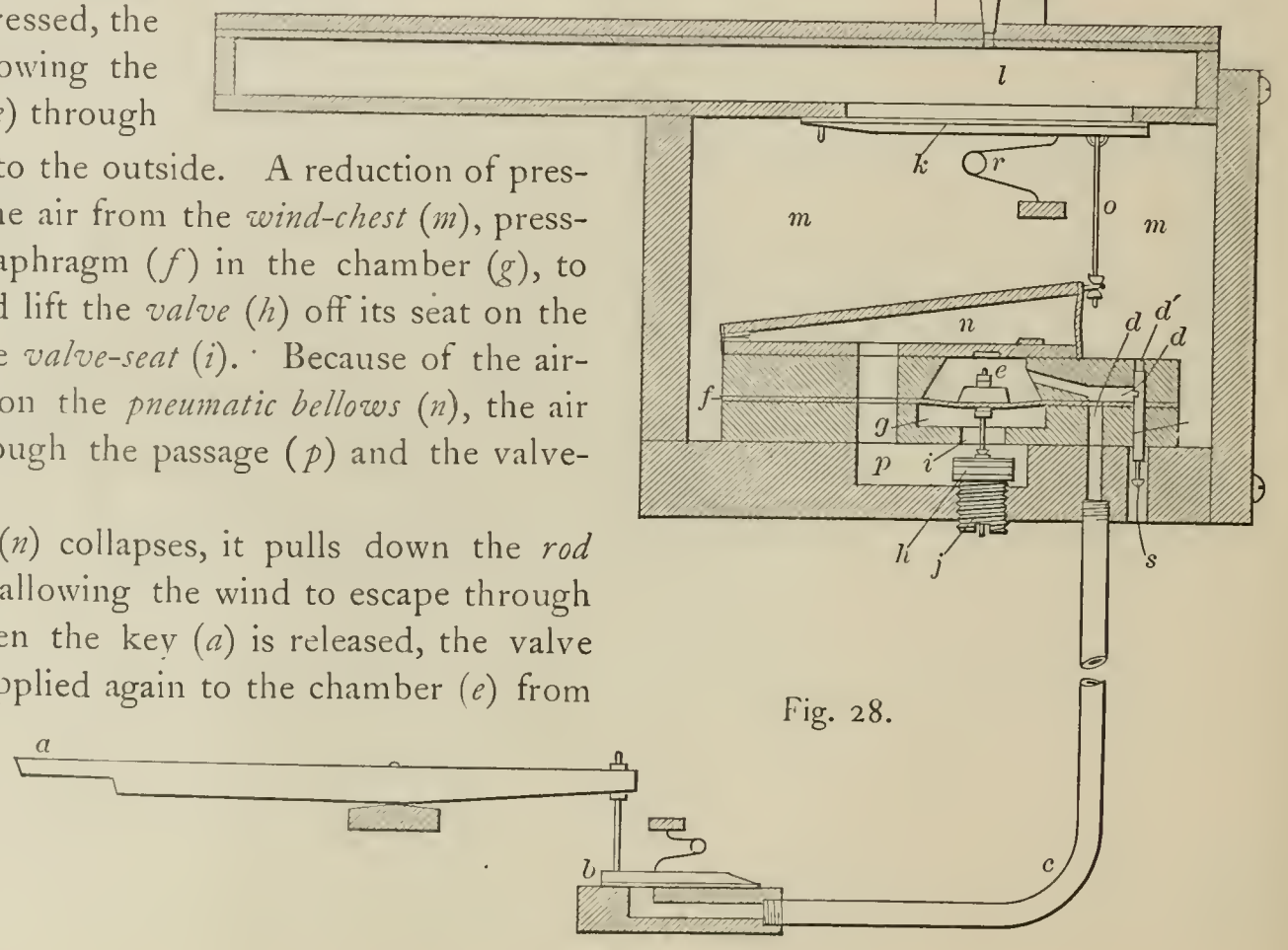


Fig. 28.

wind-chest (*m*) to the chamber (*e*) to establish equal pressure on both sides of the diaphragm. As the chamber (*e*) fills, the diaphragm (*f*) moves back, pushing down the valve (*h*) and closing the outlet (*j*). From the wind-chest (*m*) the air once more enters the chamber (*g*), passing through the valve-seat (*i*) and the passage (*p*) into the pneumatic valve (*n*). The *screw* (*s*) and the valve-casing (*j*) provide a convenient adjustment of the working parts from the outside, while the wind is in the organ. The *spring* (*r*) is to hold the pallet (*k*) tight against the box (*l*).

In Fig. 29 the action is shown at rest; and in Fig. 30 is a view of the same action when the key is depressed and the pipes sounding. The action is so spontaneous that with a reasonable length of pneumatic tubing one may obtain a perfect repetition.

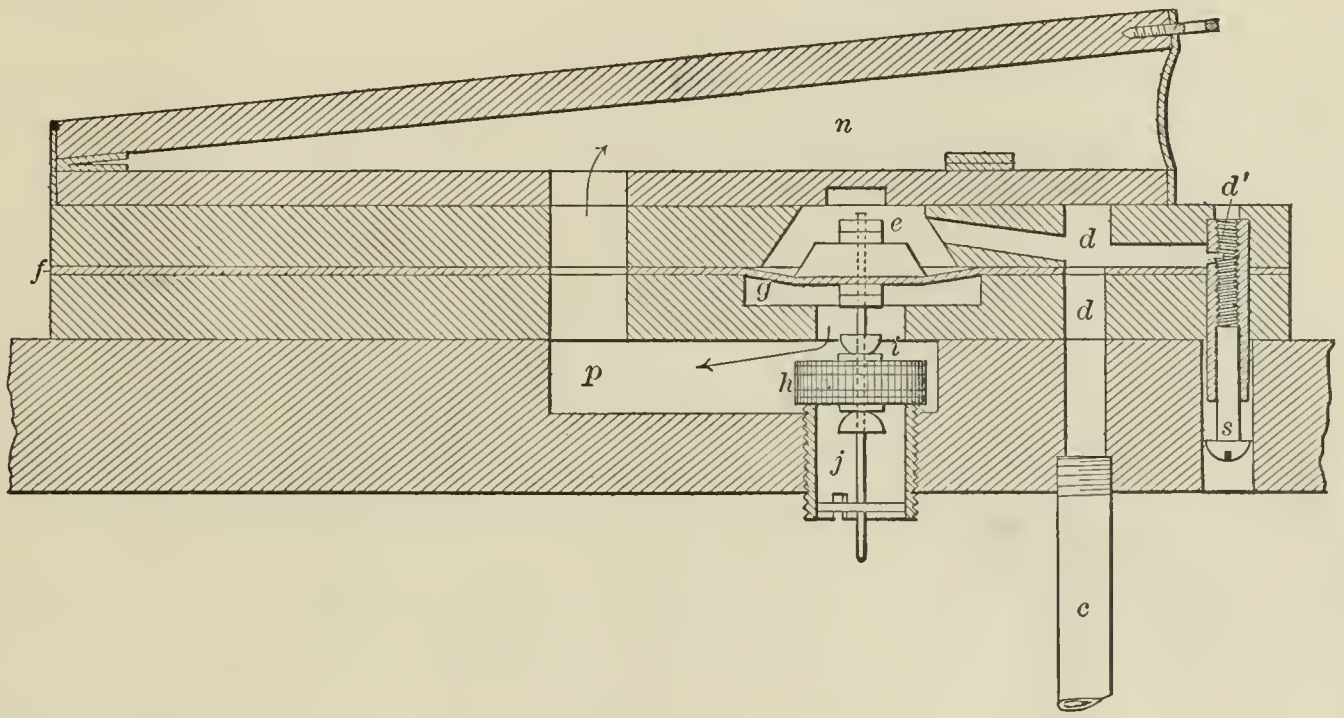


Fig. 29.

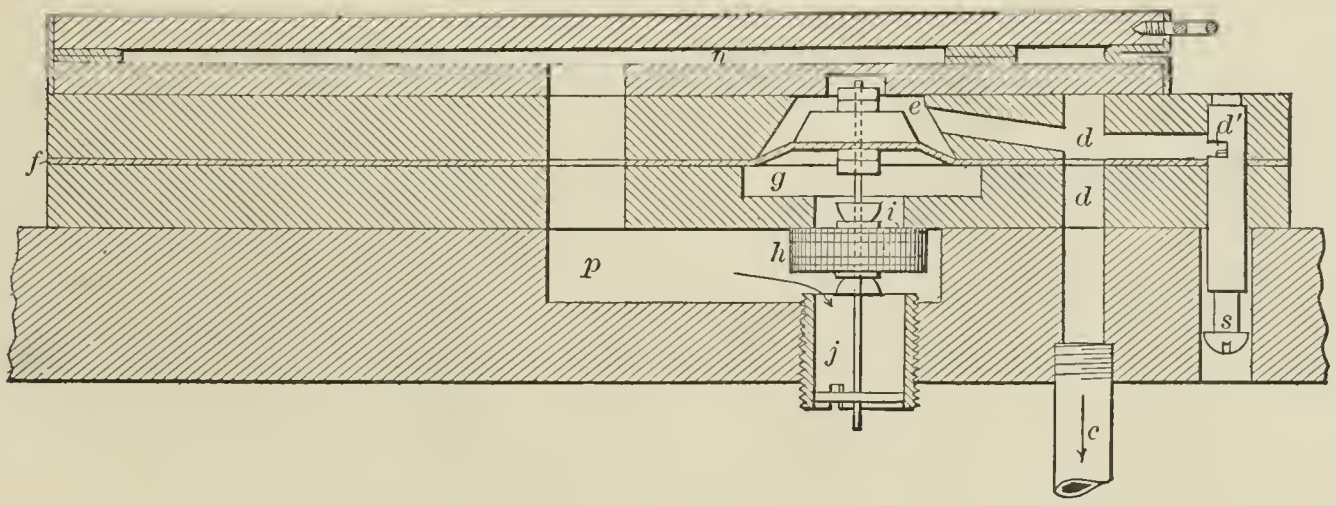


Fig. 30.

Electric Action.

In Fig. 31 the explanation for the Tubular Pneumatic applies, with the exception that in place of the tube (*c*) and valve (*b*), Fig. 28, *electric wires* (*x*) are used, and the *key-contact* (*t*). The *magnet* (*y*) draws up the *armature* (*4*) which allows the air from the chamber (*e*) to escape through the passage (*d*) to the outside. The rest of the action takes place as in the pneumatic. Fig. 32 is an enlarged drawing of the magnet and its setting.

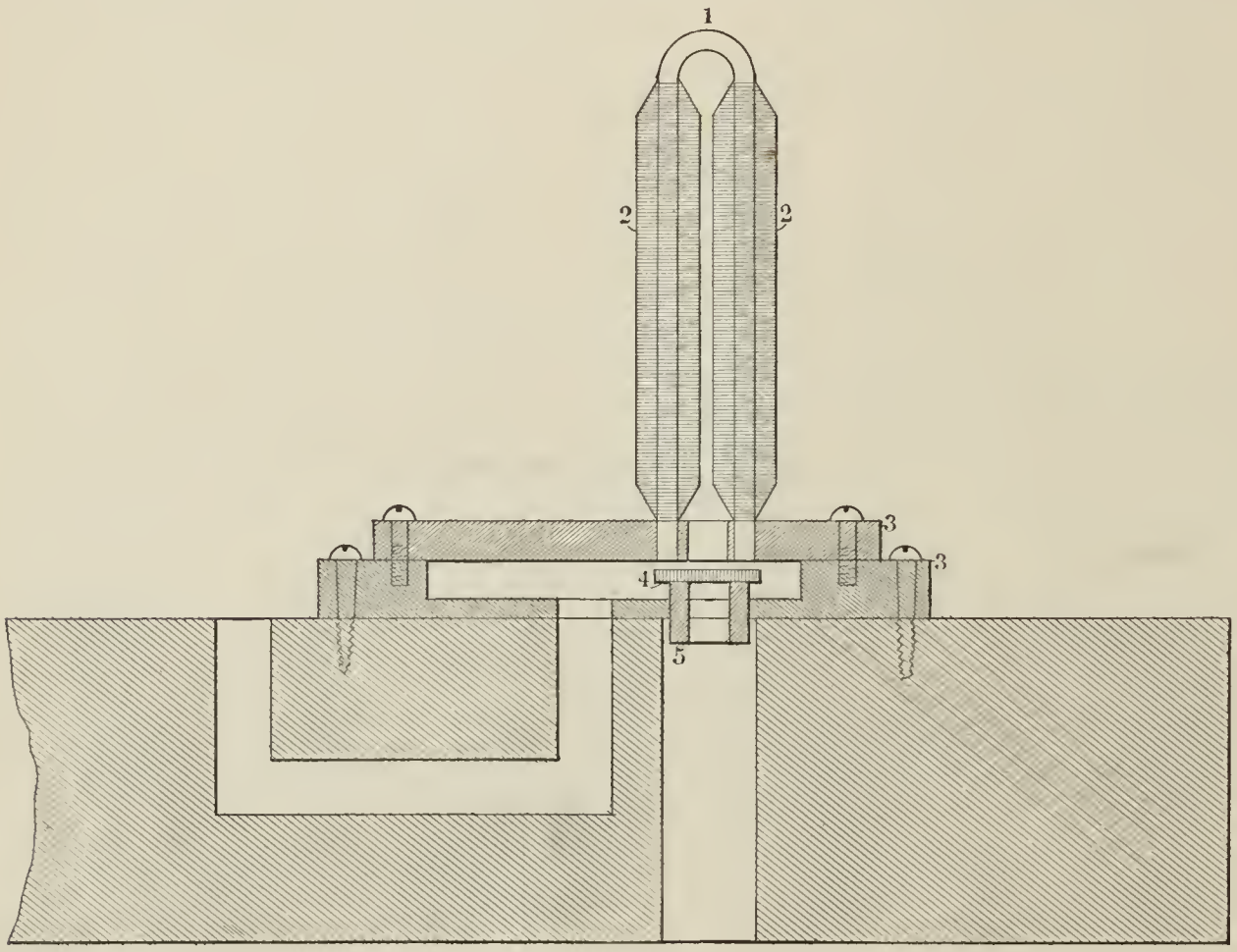


Fig. 32.

1 Iron core.
2 Silk-covered copper wire.
3 Brass base-plates.
4 Armature–very small soft iron disc.
5 Adjustable armature seat.

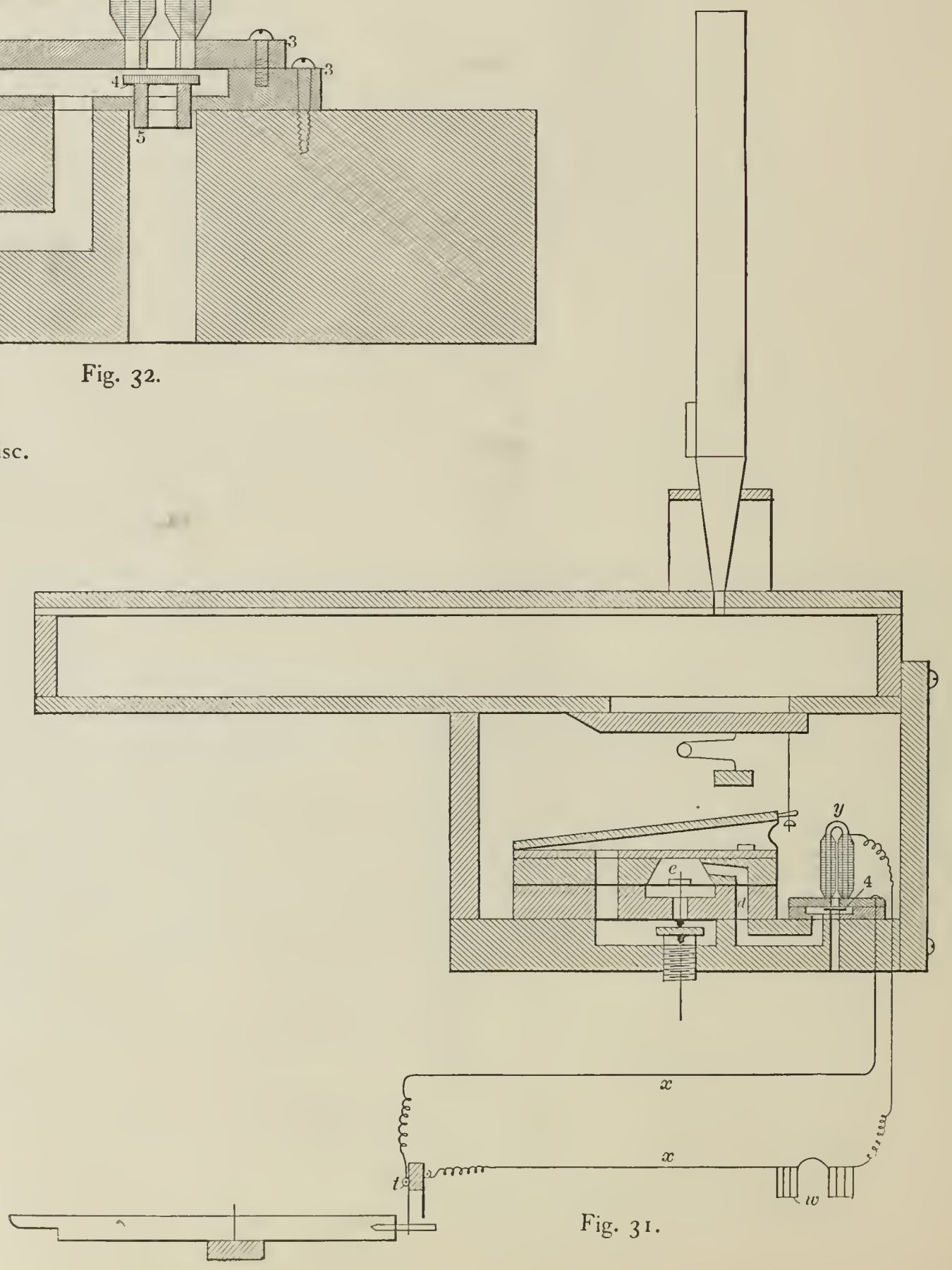


Fig. 31.

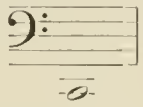
y Magnet.
t Key-contact.
w Batteries.
x Wires.

PART III.

STOPS AND THEIR MANAGEMENT.

As a rule, the tone-quality of a stop is shown by its name: *Flute*, *Trumpet*, *Viol da Gamba*, etc.

The pitch of a stop is made known by stating the length of the longest pipe it contains.

A pipe closed at the top with a stopper, or other covering, produces a note one octave lower than an open pipe of the same length. Thus the note  is sounded by an open pipe eight feet in length, but the same note is sounded by a stopped pipe 4′ in length. Hence, the stopped pipe is said to be of 8-foot *tone*, and not of 8-foot *length*.

Stops of 8-foot length or 8-foot tone are of unison pitch, that is, of the same pitch as a pianoforte.

By a law which is familiar to all, a pipe of 4′, proportionately formed, will sound notes an *octave higher* than one of 8′. So also a pipe of 16′ will produce a sound an *octave lower* than one of 8′; similarly, one of 2′, two octaves above one of 8′; and so on.

Hence, a 16-foot stop on the manuals is called a *Double* stop.

Stops of 8′ (or unison pitch), 4′, or 2′, are called Foundation stops (if not specially voiced for solo use).

Stops of 5 feet 4 inches (5′ 4″), and 2′ 8″, are called Mutation stops.

Stops having several small pipes to each note are called Compound stops.

It will be convenient, therefore, to classify stops under these four heads:

1. Double.
2. Foundation.
3. Mutation.
4. Compound or Chorus.

Manual Flue-Stops.

The DOUBLES most usually met with are:

LENGTH.	NAME.	CHARACTER.
Of 16-foot length or tone	Double Stopped Diapason, or Bourdon (16-foot tone)	Soft and sweet.
	Double Gamba, or Contra-Gamba	Reedy, but generally soft.
	Double Open Diapason, or Double Diapason, metal	Of full, rich tone.

The FOUNDATION STOPS usually met with are:

Of 8-foot length or tone	Stopped Diapason	Soft and sweet.
	Lieblich Gedackt	
	Clarinet Flute	
	Rohrflöte or Flûte à Cheminée	
	Hohlflöte	Sweet, but of fuller tone.
	Harmonic Flute	
	Salcional (Salicional), or Salicet	Soft and reedy.
	Dulciana	
	Keraulophon	
	Gamba, or Viol da Gamba	Very reedy.
	Gemshorn	Thin and delicate.
	Spitzflöte	
	Viole d'Amour	
	Gross Flute	More powerful than the above.
	Small Open Diapason	
	Large Open Diapason	Full and rich.
	Bell Diapason	Very rich, full, and very reedy.
	Flûte à Pavillon	
	Gamba (full-toned), or Bell Gamba	

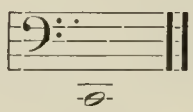
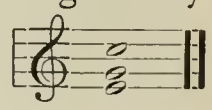
LENGTH.	NAME.	CHARACTER.
Of 4-foot length or tone	Flute, Waldflöte, Flûte d'Amour	Sweet and bright.
	Salicet Flute, Gemshorn, Geigen-Principal, or Violin-Diapason, Spitzflöte	Reedy and very bright.
	Principal, or Octave	Full-toned.
Of 2-foot length or tone	Piccolo, Flageolet, or Flautina	Very bright, but "fluty."
	Spitzflöte, Gemshorn	Very bright, almost shrill.
	Fifteenth, or Super-octave	Bright and full-toned.

The MUTATION STOPS usually met with are:

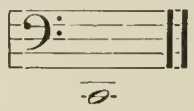
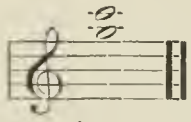
Of 5′ 4″	Quint	Full tone; adds breadth and dignity in combination.
Of 2′ 8″	Twelfth, or Octave-Quint	Full tone; adds richness in combination.

The COMPOUND STOPS usually met with are:

These stops have several pipes to each note.	Echo Cornet	Soft in combination.
	Sesquialtera	Adds fullness.
	Furniture	" "
	Mixture	Adds brilliancy.
	Sharp Mixture	" "

So much variety is found as to the number of ranks of Compound stops, their scales, etc., that a separate treatise might well be written on this subject alone. The young reader must be content to know that generally a Sesquialtera is so arranged that on playing the note  the following tones are produced : 

As the continuation upwards of such a series of small pipes would be impossible, there is at certain notes a *break* or *return* to the same tone as an octave lower. This is the case with all Compound stops.

If the Mixture stop be drawn and the note  be played, generally, the following tones will be heard ·  but these are very soon changed by a break.

Sometimes a Sesquialtera has five ranks, and thus includes the pipes usually found in the Mixture.

Manual Reed-Stops.

The following list includes the principal stops of this class:

LENGTH.	NAME.	CHARACTER.
Of 16-foot length	Tenoroon, or Contra-Hautboy	Soft and rich; generally on the Swell Organ.
	Double Bassoon	
	Double Trumpet	Full-toned and rich.
	Trombone	
	Contra-Posaune	
Of 8-foot length	Oboe (Orchestral)	Of special quality of tone; generally used independently as solo stops.
	Clarinet, or Cremona	
	Corno di Bassetto	
	Cor Anglais	
	Vox Humana	
	Oboe or Hautboy	Soft and sweet; used on Swell as Foundation stop.
	Horn	Full and rich (when on Swell).
	Cornopean (smoother tone than the Horn)	
	Trumpet	
	Posaune	Loud and rich.
	Tromba	
	Harmonic Trumpet	Very loud and brilliant (generally on a high pressure of wind).
	Tuba Mirabilis	
Of 4-foot length	Octave Hautboy (now obsolete)	Bright.
	Clarion	Very bright.

Reed-stops of 2-foot length are extremely rare in the manuals; those of $5\frac{1}{3}'$ and $2\frac{2}{3}'$ are never made in this country. Compound reed-stops are unknown.

Certain stops do not exactly come under any of the above divisions—such, for instance, as the Vox Angelica, Voix Céleste, or Unda Maris, a stop of an undulating, wavy tone, the peculiar effect of which is produced by placing together two ranks of *Dulciana* or *Salcional* pipes, and then making one rank slightly flatter than the other. The *beats* which result from the want of "accord" cause the characteristic waviness.

The Vox Humana or Voix Humaine is a reed-stop of a strange "whining" sort of tone, supposed by imaginative hearers to resemble the human voice. It is often used not only as a solo stop, but in full chords; and its likeness to the human voice divine is thought to be largely increased by the use of a *tremulant*, or mechanical contrivance for producing a regularly recurring disturbance of the supply of wind, the result being that the tones sound unnaturally nervous and highly mock-pathetic.

The Tuba Mirabilis and Harmonic Trumpet, though generally used as solo stops, are occasionally, for a short time, used in conjunction with the full organ, if a remarkably grand *fortissimo* is required.

Pedal Flue-Stops.

The all-important distinction between stops on the Pedal Organ and those on the Manuals is that the former are uniformly *one octave lower in pitch*. Thus, as the Open Diapason of a Manual is of 8-foot length, the Open Diapason on the Pedal Organ will be of 16′; also, as the *Double* stops of the manuals are of 16-foot length or tone, those of the pedals are 32′.

The DOUBLES most usually found on the Pedal Organ are:

LENGTH.	NAME.	CHARACTER.
Of 32-foot length or tone	Sub-bass, or Double-stopped Diapason, or Contra-Bourdon (32-foot tone)	Very soft; of little use but in combination.
	Double Diapason	Very rich and fine down to lowest G or F, then chiefly useful in combination.

The FOUNDATION STOPS of a Pedal Organ are usually:

Of 16-foot length or tone	Bourdon (16-foot tone)	Soft and most useful.
	Violone. The Violone, when carefully voiced, gives an excellent imitation of the "bite" of the bow on a Double-Bass.	
	Open Diapason	Full and heavy.
Of 8-foot length or tone	Stopped Flute (8-foot tone or Bass Flute	Sweet and soft; generally useful.
	Violoncello	
	Principal, or Octave	Full-toned; most useful to strengthen the bass.
Of 4-foot length	Fifteenth, or Super-octave	Adds brightness.

The MUTATION STOPS usually found on a Pedal Organ are.

Of 10′ 8″	Quint	Produces a very heavy tone in combination.
Of 5′ 4″	Twelfth	Adds brightness.

A COMPOUND STOP is often found on large Pedal Organs, namely:

	Mixture	Of three or more ranks.

Pedal Reed-Stops.

The following list includes the chief stops of this class:

Of 32-foot length	Contra-Fagotto	Soft, but useful only in combination.
	Contra-Posaune	Most useful addition to full power.
	Contre-Bombarde	
Of 16-foot length	Fagotto, or Bassoon	Soft and frequently useful.
	Trombone	Adds weight to a *forte* combination.
	Posaune	
	Bombard	Of great power and grandeur.
	Ophicleide	
Of 8-foot length	Bassoon	Soft and useful.
	Clarion, or Trumpet	Gives brilliancy to *forte* combination.
Of 4-foot length	Octave Clarion	Adds brilliancy.

COMBINATION OF STOPS.

The following tables of combinations will teach the student the principles on which stops are added to each other, and what stops to draw when practising by himself. It will be found that in the case of a large organ the numbers of Foundation, Mutation, and Compound stops remain in much the same proportion as in a small instrument.

Great Organ.

The progressive stages of tone on the Great Organ will be (if the instrument has no Choir Organ):

- Dulciana, 8′ / Lieblich, or / Stopped Diapason, 8-foot tone / Gamba (if soft), 8′ / Flute, 4-foot tone or 4′ — *pp*
- *p* (bright) (other combinations as below).

Or (if there is a Choir Organ):

- Clarabella, 8′, or Melodia / Stopped Diapason, 8-foot tone / Soft Open Diapason, 8′ / Large Open Diapason, 8′ / Gamba, 8′, or Viola, or Viol da Gamba / Flute, 4′ — *pp*
- *p*
- *mf* (rich)
- *mf* (fuller and brighter)
- *mf* (almost *f*)
- *f*
- Principal, 4′, or Octave / Double Diapason, 16′, or 16-foot tone / Twelfth, 2′ 8″, or Octave-Quint / Fifteenth, 2′ / Sesquialtera / Mixture / Double Trumpet, 16′ / Trumpet, 8′ / Clarion, 4′ — *ff*

If the Great Organ pipes are not on a high pressure of wind, the following would be a common gradation of power on a small instrument:

- Stopped Diapason, 8-foot tone / Clarabella, 8′ — *pp*
- Open Diapason, 8′ — *p*
- Principal, 4′ / Flute, 4-foot tone — *mf*
- Twelfth, $2\frac{2}{3}$′ / Fifteenth, 2′ / Bourdon, 16-foot tone — *f*
- Sesquialtera / Trumpet 8′ — *ff*

The Stopped Diapason and Clarabella or Harmonic Flute (8′) are valuable as solo stops.

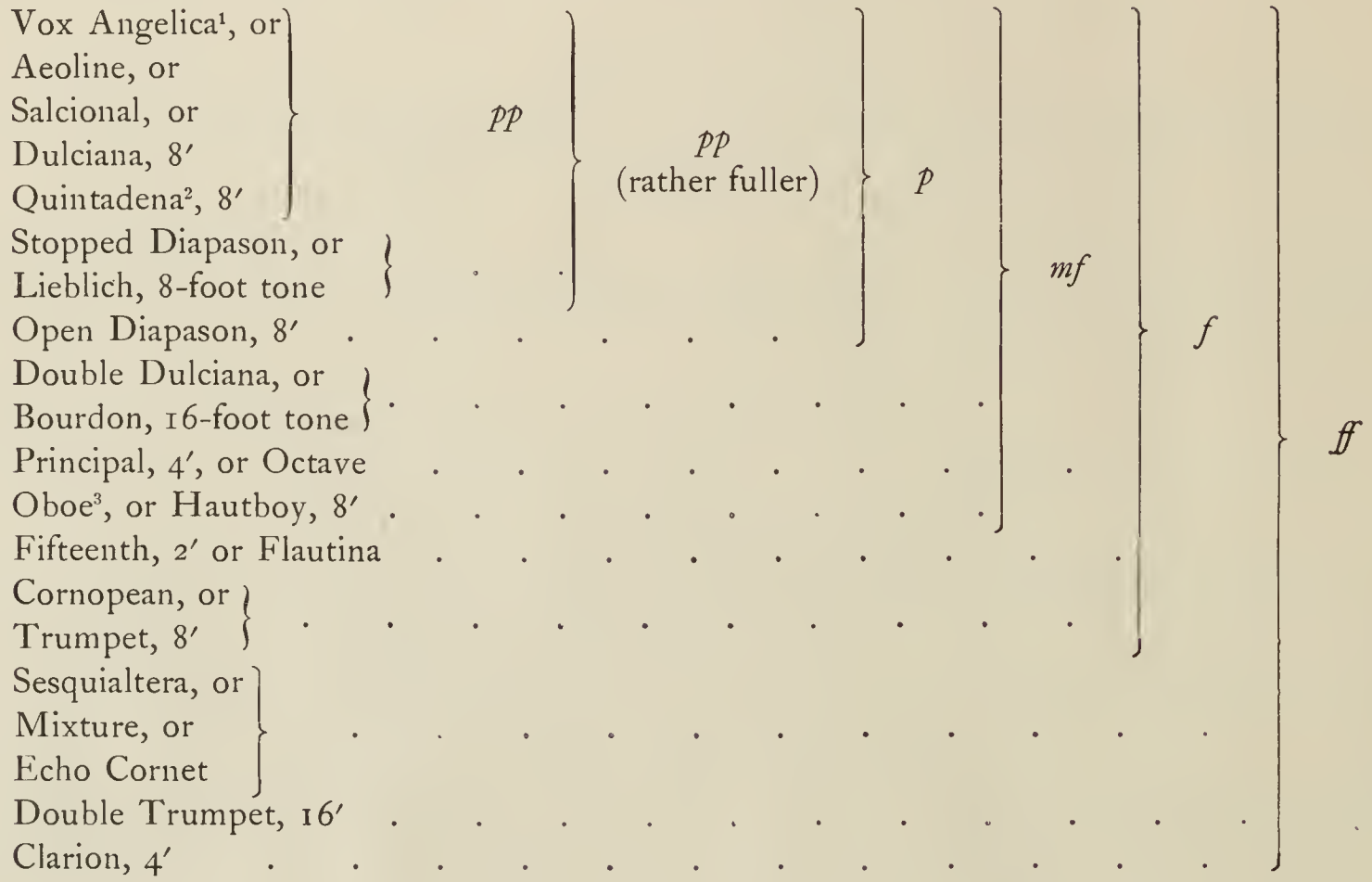
A good "Small Open Diapason" is often most useful as a solo stop, especially in the middle and lower portions.

Other combinations, such as Flute (4-foot tone) with Bourdon (16-foot tone), or the Trumpet with or without the Diapasons, will be found available for special effects.

Swell Organ.

The chief characteristic of the Swell Organ is the number of its reed-stops. The fine *crescendo* obtained by their use accounts for this.

The following will show the ordinary gradations of tone required:



Some beautiful effects may be obtained by playing *an octave higher* on such combinations as the following:

Bourdon, 16-foot tone; Dulciana or Salcional, 8′ — or — Double Dulciana, 16′; Stopped Diapason or Lieblich, 8-foot tone; — or — Double Trumpet, 16′ (if soft); Oboe, 8′

If the stops of a Swell Organ are thoroughly well balanced as to tone, a mysterious and solemn effect can often be obtained by using all the stops *except the reeds*, or, as it is termed, playing "full without reeds."

On many Swells the following is a peculiar but charming combination:

Bourdon, 16-foot tone, or Double Dulciana, 16′
Stopped Diapason, 8-foot tone
Open Diapason, 8′
Principal, 4′; Flute, 4-foot tone
Fifteenth, 2′, or Piccolo, 2′

The stops on the Swell often used for solos are —

Oboe (alone, or with a Diapason) } Accompanied on Choir, *p*.

Cornopean or Trumpet (alone or with a Diapason) } Accompanied on Choir, *p* or Great, *pp*.

---

[1] The Vox Angelica is *rarely* used in *combination*.

[2] The Quintadena is a peculiar stop producing the ground-tone and the twelfth distinctly from one pipe. It is useful in combination.

[3] Sometimes the lower octave of the Oboe is made to draw on a separate stop called the Bassoon.

Choir Organ.

As a rule, stops of a delicate quality of tone are generally assigned to the Choir Organ. The following would be ordinarily a graduated list of combinations on the Choir Organ:

- Dulciana, or Salcional, 8′ — Viol da Gamba, 8′ . . — *pp*
- Lieblich, or Stopped Diapason, 8-foot tone . — Clarabella . . . . . — Open Diapason . . . . . — Flute, 4′ . . . . . — *p*
- Principal, 4′ . . . . . — *mf*
- Piccolo, or . . . . . — Flageolet, 2-foot tone . . . . . — *mf* (bright)
- *f*
- *ff* (very bright)

Solo combinations on Choir Organ:

- Flute, 4′ + Viol da Gamba, 8′ — Very bright and pretty.
- Flute, 4′ + Clarabella, or Lieblich — Clear and sweet.
- Clarinet, or Cremona, or Krummhorn, or Corno di Bassetto, 8′ with Lieblich, or Clarabella — Very full and rich, but soon becomes monotonous.
- Piccolo, 2′ + Stopped Diapason, or Lieblich — Very brilliant for rapid runs in variations, etc. Must be used sparingly.

The addition of a 4-foot flute to a stop of "clarinet" tone produces a somewhat tender and mournful effect.

Solo stops or combinations on the Choir Organ will ordinarily be accompanied by a soft (not too soft) combination on the Swell.

In cathedrals and churches where there is a choral service, the soft stops of the Choir Organ form a charming accompaniment to a solo voice or voices *soli*; but this organ is rarely powerful enough to give support to a large number of voices singing *forte*.

Solo Organ.

As its name implies, to this organ are assigned stops for solo use. Except in very large organs, not more than four distinct qualities of tone are found amongst these registers, namely, Flute (8′ or 4′), Oboe (Orchestral), Clarinet, Tromba (or Tuba).

It will hardly be expected that anything should be said as to the "combination" of stops specially intended for independent use. All that need be pointed out is, that many organists always use an 8-foot Flute or Clarabella with the Clarinet, in order to give it more *body*. Some players always use an 8-foot Flute with the solo Tromba (or Tuba), because it gives mellowness to the tone.

The solo stops can be accompanied by any row of keys found suitable. On account of the remarkable power of the Tromba, the Great Organ is frequently used as an accompaniment to it. When this stop is of a rich, pure tone it may occasionally be used in full chords, either on its own row of keys or coupled to the Full Great.

Stops usually found on the Solo Organ are:

Stentorphone, 8′. A powerful Diapason stop.
Gross Flute, 8′. A flute of the Melodia quality.
Violoncello, 8′. A rich and full Gamba stop.
Orchestral Flute, 4′. Voiced specially to imitate the orchestral instrument.
Flûte harmonique, 4′. Sweet and clear tone.
Orchestral Clarinet, 8′. Closely resembling the orchestral instrument.
Bass or Double Tuba, 16′. Full, rich reed-tone.
Tuba Mirabilis, 8′. A smooth, heavy reed.

The Echo or Celestial Organ.

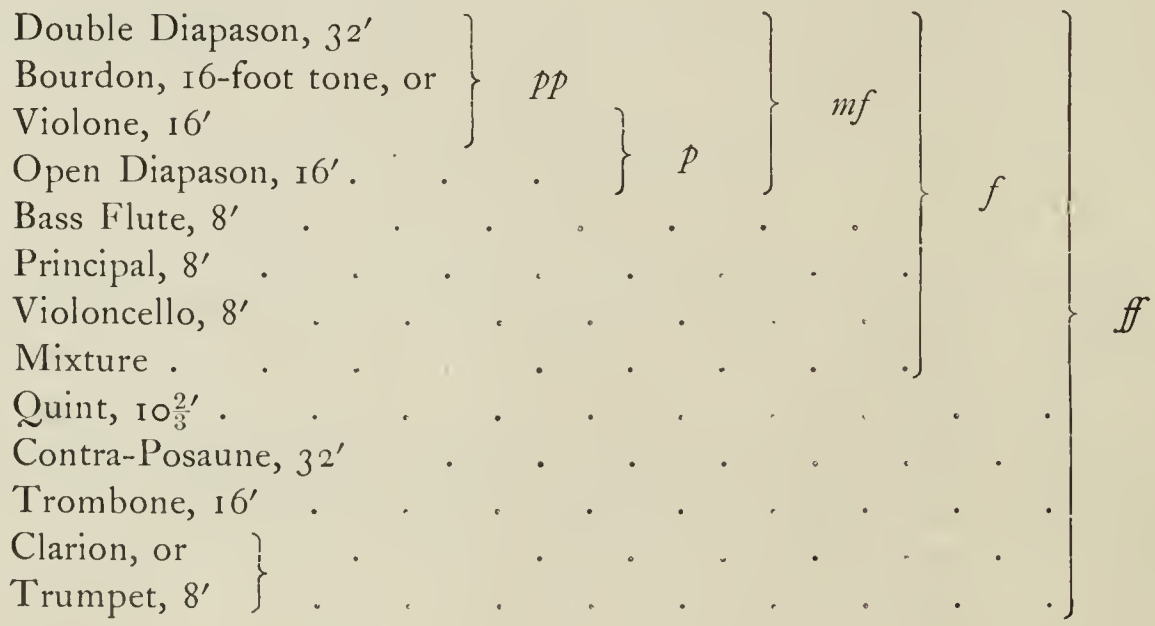
In large organs the Echo or Celestial department is placed in a swell-box and located in a distant part of the building. The stops are designed for special and very delicate effects.

Some of the stops found upon this organ are:

Bourdon, 16′. Voiced specially light.
Lieblich Gedackt, 8′ Delicate Flute-tone.
Viole d'orchestre, 8′. Soft and slender Gamba-tone.
Voix céleste, 8′. Sweeter and more delicate than the Swell Voix célestes.
Flauto traverso, 4′. A very light flute.
Orchestral Oboe, 8′. A close imitation of the Orchestral instrument.
Vox humana, 8′. A reed-stop of delicate timbre.
Carillons. A set of bells or steel tubes of remarkable beauty.
Echo Cornet. A compound stop of delicate intonation.

Pedal Organ.

On small organs the player has not a large number of pedal stops to select from. On large instruments considerable skill may be displayed in the use of varieties of tone on the Pedal Organ and their adjustment to the power and quality of the manuals. On organs with two pedal stops, a Bourdon of 16-foot tone (or in its place a Violone of 16′), forms the soft pedal, and an Open Diapason of 16′ is added for *forte* passages; all other gradations of tone being obtained by coupling the manuals to the pedals. A pedal stop of 32-foot length is rarely used alone except in its upper portion.



On large organs having some very delicate pedal reed-stops such as Fagotto, 16′, or Fagotto, 8′, some delightful effects can be produced by their judicious use.

It is very difficult to give any definite advice as to the coupling of manuals to pedals. For *legato* playing, and where uniformity of tone is necessary, it is generally advisable to couple them to the particular manual on which the chief harmonies are being played. Soft *staccato* passages, however, generally sound better when played on pedal stops without any manual being coupled.

Young organists should be specially warned against the use of too many pedal stops. The overweighting of the manual-tone by the Pedal Organ becomes exceedingly unpleasant if continued for any length of time. Variety is as important in the use of pedal stops as in every other department of playing.

Manual Couplers.

In all pieces or passages in which the *crescendo* of the Swell is required in addition to the steady, dignified tone of the Great, it is usual, of course, to couple the Swell to the Great Organ; but on the other hand, the occasional use of the Great *without* the Swell coupler, especially if the diapasons are good, will be found to produce a very pure and "fresh" effect.

When an organ contains a coupler "Swell to Choir," this may be drawn with advantage, either for the purpose of adding a *crescendo* to a passage being played by both hands on the Choir, or (when a solo combination is being used on the Choir with accompaniment on the Swell) for the purpose of producing the same *crescendo* in the accompaniment as in the solo part.

A very valuable addition to the Diapason or flute-tone of the Great Organ is obtainable by the coupler "Solo to Great," which enables any rich-toned stop of 8′ or 4′ on the Solo to be combined with the 8-foot or 4-foot stops of the Great.

Octave couplers, such as "Swell to Great super-octave" or "Swell to Great sub-octave," will be found occasionally of great value, not only as productive of unusual effects, but also as enabling the player to render rapid orchestral octave-passages effectively and smoothly while playing only single notes.

By drawing one or more fine reed-stops on the Swell, shutting off *all* the Great Organ stops, and drawing sub-octave, unison, and super-octave couplers, a very fine *crescendo* may be obtained by playing on the Great Organ manual with both hands.

List of Couplers found upon modern organs of four Manuals and Pedal:

Swell to Great.
Swell to Great, 4′ (Super-octave).
Swell to Great, 16′ (Sub-octave).
Swell to Swell, 4′ (Super-octave).
Swell to Swell, 16′ (Sub-octave).
Swell to Choir.
Swell to Solo.
Great to Great, 4′ (Super-octave).
Great to Great, 16′ (Sub-octave).
Great to Swell (sometimes used).
Choir to Great.
Choir to Great, 4′ (Super-octave).
Choir to Great, 16′ (Sub-octave).
Solo to Great.
Solo to Solo, 4′ (Super-octave).
Solo to Solo, 16′ (Sub-octave).
Swell to Pedal.
Choir to Pedal.
Great to Pedal.
Solo to Pedal.

There is no department in musical art which has progressed as rapidly during the last twenty years as the mechanical appliances of the modern organ. While the foundation stops remain about the same as they were some two hundred years ago, much attention has been given to the invention of light and delicate stops. The last ten years have seen a remarkable development in string-tone stops, and it is not too much to say that they are superior to, and contain more agreeable harmonics or upper partial tones than, the Mixtures. Modern Mixtures are generally too harsh to be agreeable, but with the great variety of couplers and string stops, they will be required only in very large instruments.

The student is warned against using super- and sub-couplers every time he uses the Full Swell or Great, as they are apt to prove wearisome to the listener. Couplers used for solo effects are invaluable, and their use with the full organ should be reserved for a grand climax.

Special Stops Invented by Mr. R. Hope-Jones.

Mr. Robert Hope-Jones, who has invented many wonderful electrical appliances for the convenience of organists, has also invented some remarkable stops which deserve consideration. He has built many large organs in England in which his new stops have been introduced, among the most important ones being the organs in Worcester Cathedral and McEwan Hall, Edinburgh. Mr. Hope-Jones has recently come to this country, and his specialties are being introduced into many new instruments.

A list of his special stops follows:

Diaphone. The tone of the Diaphone is produced by a rapidly vibrating valve or piston, and any quality of tone may be obtained from it, although only two varieties are used in organs, the Diaphonic Diapason and the Diaphonic Horn. The tone is always sweet and musical, and the stop is useful in small organs, but its range of power is practically unlimited. It is possible to vary the wind-pressure supplied to the Diaphone without altering the pitch.

Diapason Phonon. A heavy metal stop, of 8-foot and 16-foot pitch, of large scale, with narrow mouth cut high and provided with leathered lips. The tone is of ponderous weight, and free from the dissonant series of the upper harmonic partials.

Kinura. An echo reed-stop of 8-foot pitch, of brass, producing a wailing, plaintive tone.

Phoneuma. A stop of 8-foot and 16-foot pitch similar to the Viole d' orchestre, excepting that the pipes are stopped. The tone is delicate and peculiar.

Tibia Clausa and Tibia Plena. These stops of wood, of 8′, 16′ and 32′, furnish practically pure foundation tone without any of the harmonic series. The pipes are of large scale with narrow mouths cut very high and supplied with soft felt and leather lips, which gives a tone of dull, cloying sweetness.

Tiercina. A very small-scale stop of 8-foot pitch with stopped pipes, bearded. The tone is delicate and peculiar, the tierce sounding prominently with the ground-tone.

Tuba Sonora. A heavy wood and metal reed-stop, of 8-foot pitch. The tone is as smooth as that of a French Horn, and suggests rather a flue than a reed origin. It is placed in a cement swell-box and is of extraordinary power, heavy wind-pressure always being used.

Viole d' orchestre. A stop of exceedingly small scale of 8-foot and 16-foot pitch, made of tin. The tone is very keen, but small and quiet, and hardly five per cent. of the fundamental is present.

Double English Horn. A stop of 16-foot pitch with a very assertive tone.

Cor anglais and Orchestral Oboe. These are imitative reeds having thin and exaggerated tone-qualities.

Care of the Swell Organ.

If the organ is not to be used for a considerable length of time, care should be taken to close the swell-box, so that the reeds will not be injured by dust. Before the organ is again required for use, open the Swell and play on the various stops to equalize the temperature. During the sermon, or any long interval, in a heated building, be careful to leave the Swell open.

The Balanced Swell Pedal.

Let the student remember when opening the Swell pedal that the *first half-inch* is the most important part of the *crescendo*.

When the Swell and Choir organs are provided with separate swell-boxes, some beautiful and novel effects can be obtained by a *decrescendo*, on one manual, whilst a *crescendo* is made on the other. These pedals are generally placed together where they can be used simultaneously with one foot.

General Remarks.

In the matter of combining stops, a little experience is worth a vast amount of theory.

A refined ear and good taste will point out unmistakably, first, what combinations of stops produce a really good tone; next, which combination is most suitable for a particular passage.

It is specially necessary to warn young organists against implicit obedience to the directions given in arrangements for the organ. For instance, "full swell" is *pianissimo* on some organs in large buildings, but *fortissimo* on many others; "up to mixtures" in old cathedral organs means a rich *mezzo forte*, whereas in a modern organ (especially in a small place) it is probable the result would be a screamy *fortissimo*. When an 'arranger" has an instrument with bad "Double Diapasons" he is constantly writing the direction "without doubles," whereas, if they are so properly voiced as to become a subordinate ingredient of the tone, their frequent use is not only admissible but desirable. On an instrument with a small, weak-toned Pedal Organ a good player frequently plays the pedal part in *octaves*, but if this were to be indiscriminately followed on a properly balanced instrument the effect would often be detestable. Many German writers have written for organs possessing a large independent Pedal Organ, but very intractable couplers (if any) of "manuals" to "pedals"; in order therefore to get *strength* of tone these composers give frequent passages in octaves. When played on an English organ with proper couplers these gymnastic efforts may often (not always) be dispensed with.

Use of the Swell Pedal.

A good organist may be known, if by nothing else, by his use of the *crescendo* of the Swell Organ. A bad player, when he has a leg to spare, seems to think it cannot be better employed than by pumping the Swell pedal up and down with utter disregard to the composer's intentions. It might often be said that such performers try to use the Swell pedal even when one leg *cannot* be spared, and thus frequently sacrifice beautiful pedal-passages by consigning their rendering to the frantic efforts of the left foot only. On one occasion the writer remembers hearing an organist perform on an instrument having a very prominent Swell Organ case with highly-decorated shutters. He was playing on the *Choir* Organ with both hands and without using the pedals, but so strong was the force of habit, that his right leg was busily engaged working the Swell pedal. The absurd effect can be imagined; the tone remained level and passionless to the ear of the hearers, while their eyes were annoyed by the meaningless "gaping" of the Swell shutters.

The following rules should be impressed on young players:

"Never use the Swell pedal unless the proper expression of the music demands a *crescendo* or *diminuendo*."

"Never sacrifice the proper performance of a pedal-passage for the sake of using the Swell pedal."

"Be as careful of the way you let the pedal return upwards as of the way you press it down."

"Observe carefully the length of the passage marked *crescendo*, and do not get the Swell fully open till the *climax* — unless you are prepared to carry on the *crescendo* by adding stops."

"The Swell *crescendo* is the more effective, if not used too frequently."

Management of Stops.

Stops should on no account be changed either by composition pedals, pistons, or the hand, unless it can be done without breaking the time or disturbing the rhythmical form of the music.

It is the more important to impress this on the young organist at the present time, inasmuch as it has become a vicious fashion among a certain class of organists to hold down a chord for more than its proper duration with one hand while the other is ostentatiously hunting about for stops. This trick is bad enough when it happens to be the final chord of one movement which is unduly protracted for the purpose of preparing the stops for that which is to follow; but when, as is often the case, a chord in the middle of a passage is selected for protraction, only because it can be conveniently held down by one hand, the effect is truly distressing. The beginner will therefore do well to bear the following rule in mind:

"Never sacrifice the time or rhythm of a passage in an attempt to change the stops. Consider that the alteration of stops should have the result of producing a better rendering of an author's composition, not of ruining its effect."

PART IV.

PRACTICAL STUDY.

The student who wishes to become a *good* organist should not commence his practice on the king of instruments until he has a thorough knowledge of musical notation, can read fairly at sight, is able to play *all* his scales evenly and rapidly on the pianoforte, and, above all things, can carry his hand in a good position whilst playing chords or scales.

For giving elasticity of action to the fingers and wrists, for forming the position of the hand, and for training the touch, the pianoforte stands unrivalled. All this portion of an organist's work (and it is a *most important* portion) should be done *at the pianoforte.*

It should be distinctly understood that these things cannot be learned on a harmonium, for, delightful and useful as that long-suffering instrument is, it cannot, from its nature, so well lead a player to good organ-playing as can the pianoforte.

The student should not be in a hurry to get to the organ itself. It is no exaggeration to say that more organists have been spoilt by beginning their instrument too soon than too late.

We will assume then that our pupil has received *permission* to commence organ-practice from a trustworthy master.

The difficulties peculiar to performance on and management of an organ, as distinguished from a pianoforte, may be classified as follows:

1. Playing with the feet, or pedalling.
2. Independence of movement between the hands and feet, separately and in combination.
3. Use of the *legato* and *staccato* touch.
4. Management of the stops and various mechanical appliances.
5. Method of playing with expression.

The nature of these special characteristics of the organ must be kept separately in the mind, although the pupil will, *in practice*, soon meet them in combination.

It may be thought strange that a "method of playing with expression" should be considered a distinctive feature of organ-playing; but the fact is, the pupil will not be long before he finds that his musical feeling has to be *expressed* on the organ in a very different way from that usual on the pianoforte, and he will observe that ignorance of this fact is a fruitful source of poor and unsatisfactory performance.

The first thing to be learned on reaching the organ is, *how to sit*. It is of the utmost importance that the body should be so placed as to be in readiness for anything required of it.

The following is the test of a good position:

When seated, lift up both feet and hold them just over the pedals so that they could play, if required, either on the long or short pedal-keys, *at the same time* holding both hands over the manuals so that they could play, if required, on any of the manuals either separately or in conjunction with the feet.

If the pupil, while in this position, has an uncomfortable sensation that he is likely to knock his nose against the desk, the organ-stool is too far away from the keys or he is sitting too near its edge.

If the pupil cannot move his knees freely to the right and left, the stool is either too near the keys or he is sitting too far on it.

Shoes or boots worn when playing should not be made too *narrow* or too *round* at the toe; they should have fairly deep heel-pieces. The reason why it is necessary to have heel-pieces will be explained hereafter. Lady-pupils should avoid very small and also very circular heel-pieces, unless indeed they are prepared to undergo a temporary imprisonment or purchase liberty by the sacrifice of a boot. The *soles* should be of moderate thickness; for if they are too thin, many delicate muscles of the foot will be called into play whose coöperation is totally unnecessary in pedalling, but whose use will cause *great fatigue* to the hard-working student.

There are two kinds of pedal-boards, known as *straight* and *radiating;* both are sometimes made slightly *concave*, that is, rising gradually at the extremities. Radiating pedal-boards were invented by Mr. Henry Willis.

The pedals are played in three ways:

(1) By the tip of the toe. (2) By the heel. (3) By the flat part of the sole.

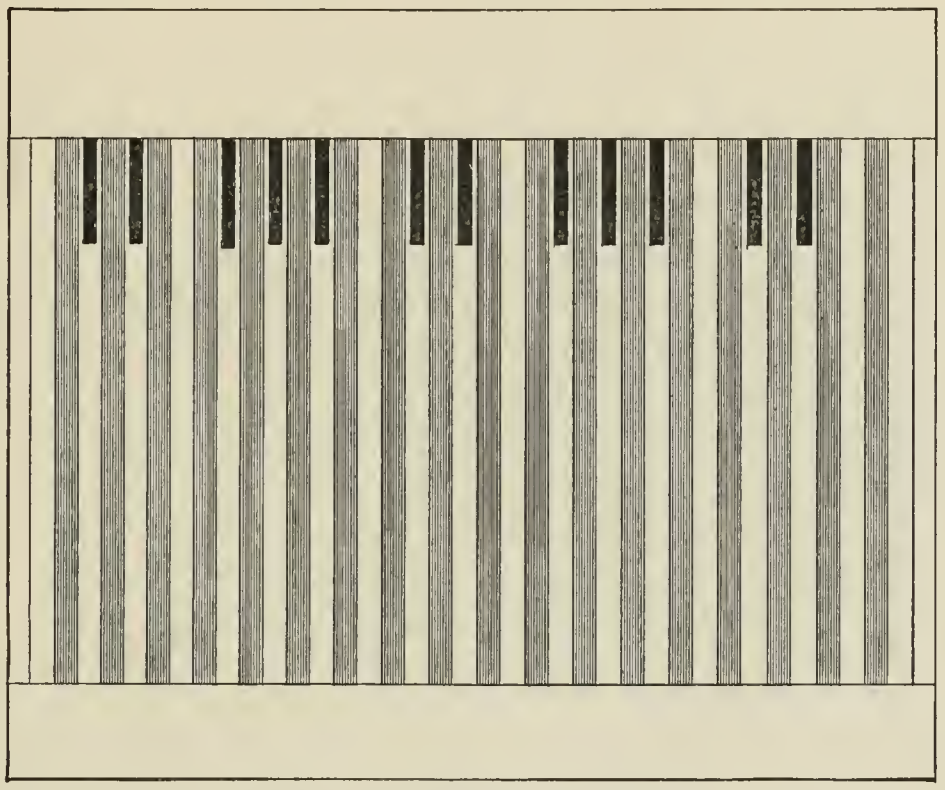


Fig. 33. Straight Pedal-board.

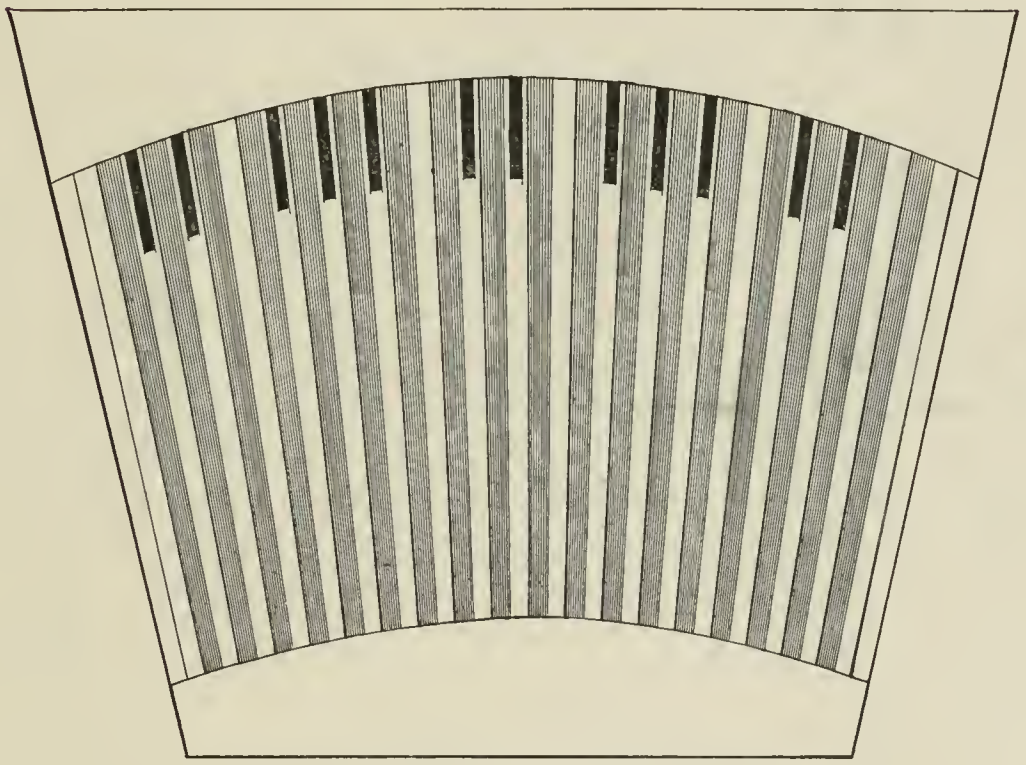


Fig. 34. Radiating Pedal-board.

Fig. 35. Section showing concavity of Pedal-board.

Many passages can be easily and neatly played by the toes only.

The heel is used only immediately before or after the toe of the same foot. Hence, passages in which systems 1 and 2 are combined are said to be "toed and heeled." Single separate notes are never played by the heel.

The flat part of the sole of the foot is used only in those scales or portions of scales which contain three sharp-keys (short pedal-keys) in succession.

Thus, if F♯, G♯, A♯, or G♭, A♭, B♭ follow each other upwards or downwards in succession, two of the notes must be played by placing the sole of the foot over *both* and then pressing down one key with one side of the foot, the other key with the other side.

As the pupil gains experience, he will find that the three systems above named are constantly mixed together. But, as a general principle, it may be stated that "toe and heel" is the easiest method of playing passages at the two extremes of the pedal-board (that is, passages which are very high or very low); while, on the other hand, pure "toeing" is easiest for passages in the central portion of the board, lying just below the player's body.

Before taking the first lesson in pedalling it is of great importance to know that the weight of the leg should never be used for pressing down the pedal-keys; only such force should be used as can be obtained from the free use of the ankle-joint.

This rule is analogous to that laid down by pianoforte teachers, to the effect that octave-passages should be played *from the wrist* and not from the arm and shoulder. The pupil will know by experience how futile it is to attempt to play octaves rapidly on the pianoforte unless the wrist-joint is perfectly free; so also he will soon find that his leg is far too clumsy to be used as a sort of *hammer* for driving down the foot, whereas, if the ankle-joint is properly used, rapid pedalling is quite easy.

When seated at the organ try and imagine that your foot moves (as it actually does) upon a centre or pivot of its own, as shown in Fig. 36 by the asterisk.

Fig. 36.

Then, if you are using the proper method of touching the pedals, you will feel, when your *toe* goes *down*, as if your *heel* were coming *up*; and when your heel goes down, as if you were *raising the toe*.

There is no reason, therefore, why the whole leg should jump up and down during pedalling; such a habit is not only unnecessary, but ugly.

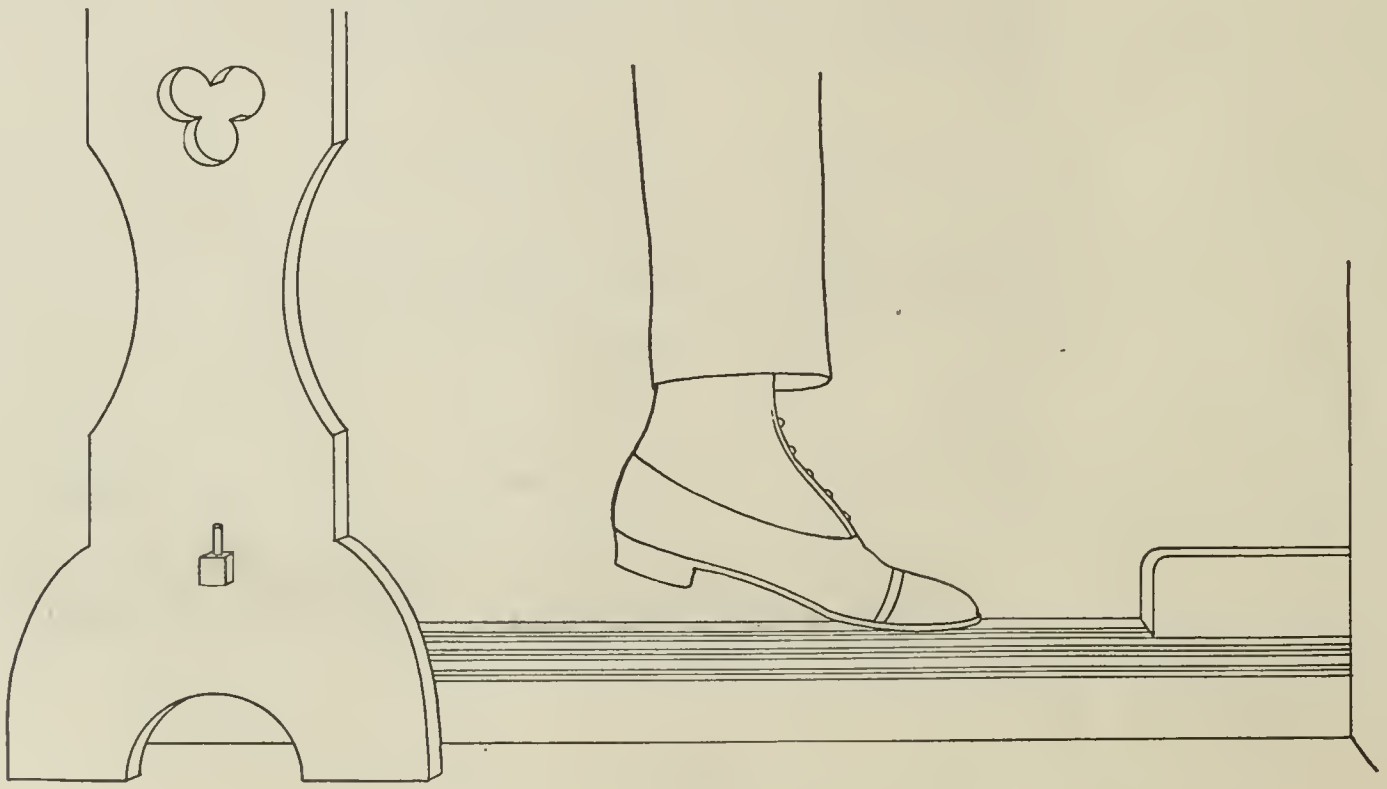


Fig. 37. Toe down on pedal-key.

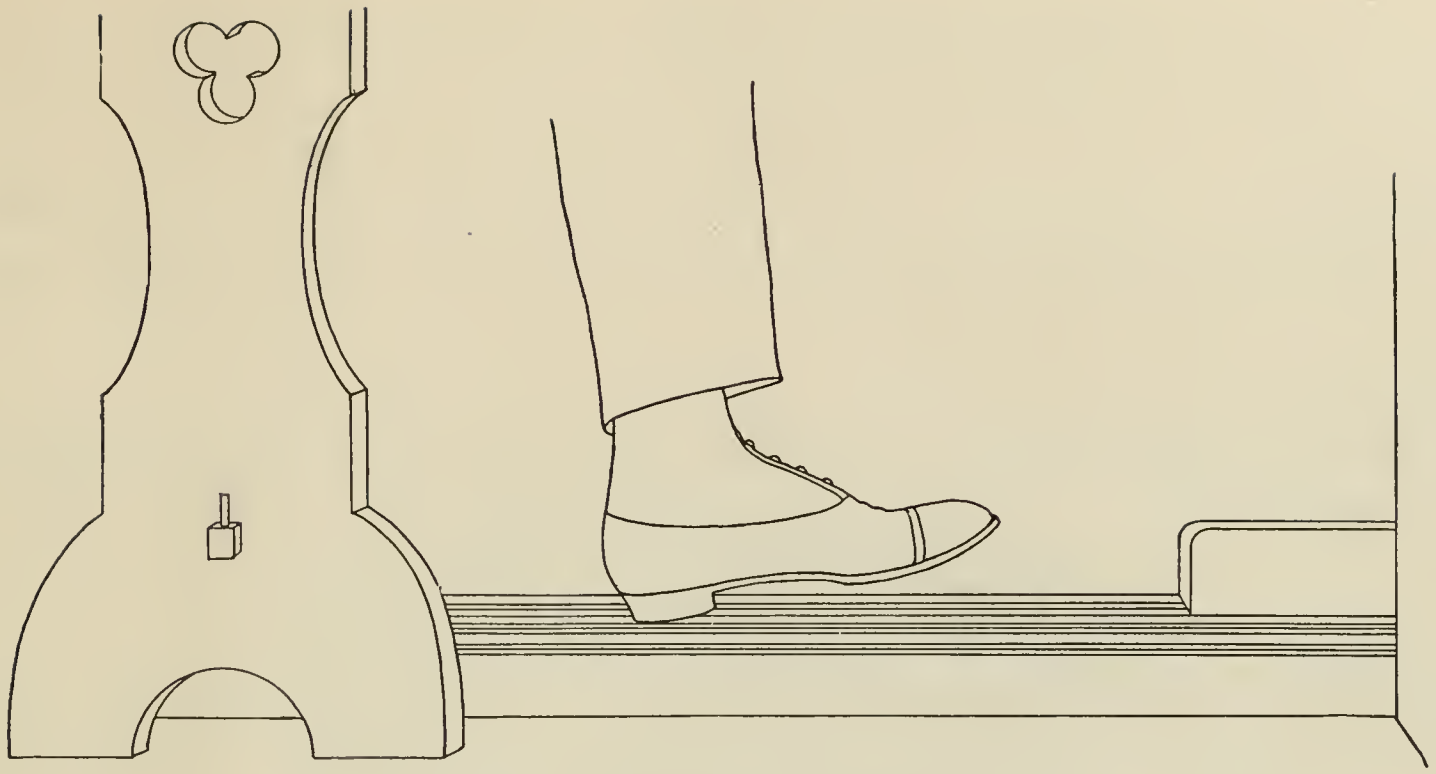


Fig. 38. Heel down on pedal-key.

When, by constantly bearing this in mind, a good pedal-touch is obtained, the ankle-joint will become elastic and free, and rapid passages can be played with that perfect ease and quietness so characteristic of a really good organist.

But if the pedal-touch be neglected, the ankle-joint will become stiff and rigid, and the *weight of the leg* will be used to drive the sole of the foot on to the pedal-keys, resulting perhaps in the destruction of some of the delicate mechanism of the instrument, but most certainly in rendering the performance of rapid passages *absolutely impossible*.

Before sitting down to play on a strange organ the pupil should have a good look at the pedal-board; but when once seated, he should on no account be allowed to steal occasional peeps at it.

This rule is laid down in order that the pupil may begin at once to play the pedals with confidence and without hesitation. A *nervous* pedallist distresses his hearers as much as himself.

When the foot is placed on one of the natural keys of the pedal-board, it should be fairly up to the *sharp-keys*, as shown in Fig. 39.

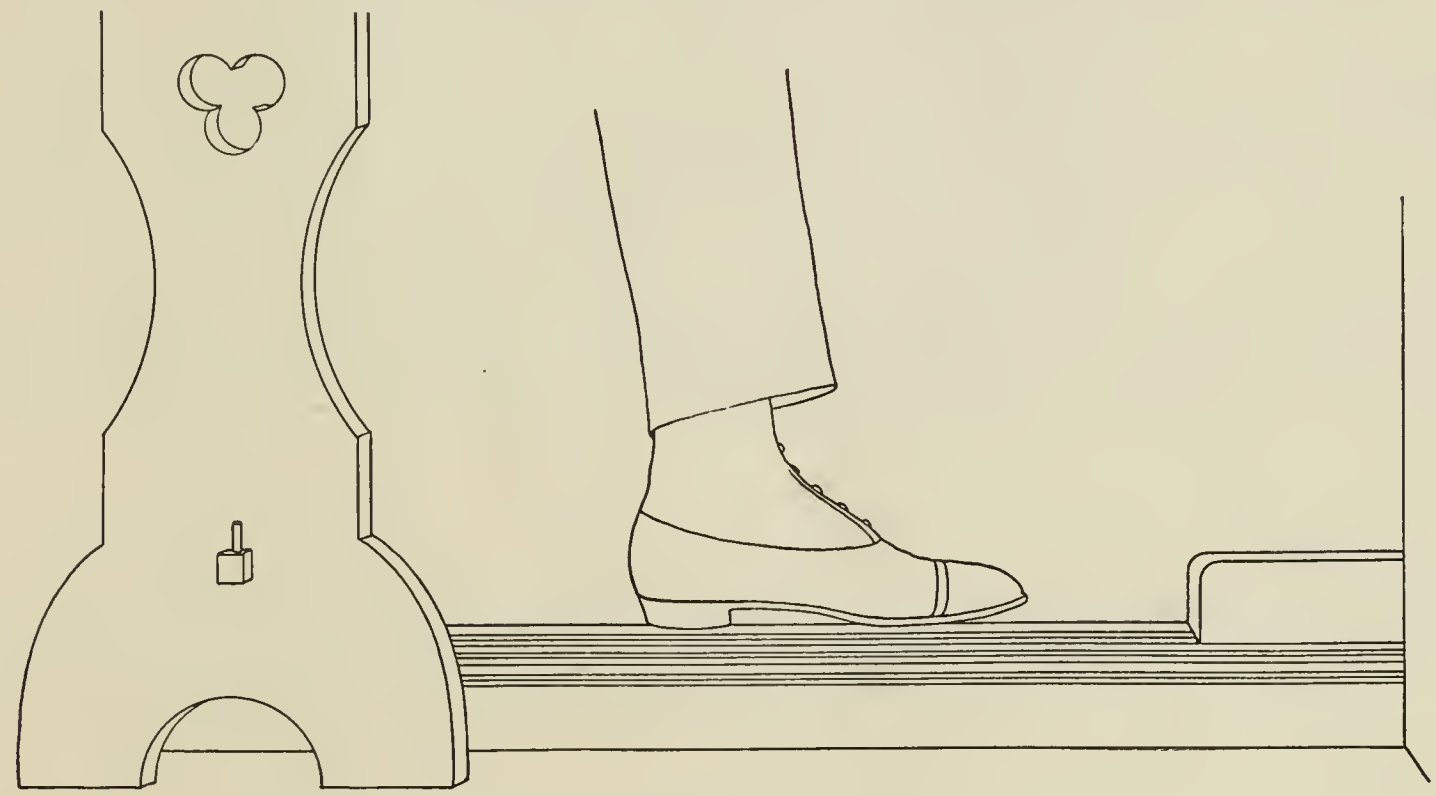
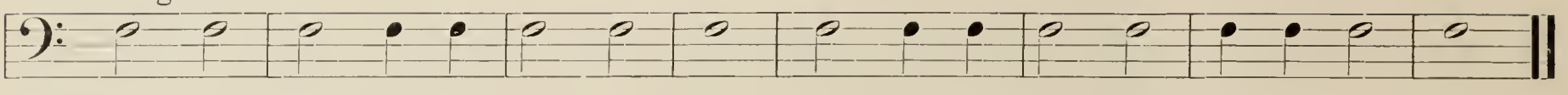


Fig. 39.

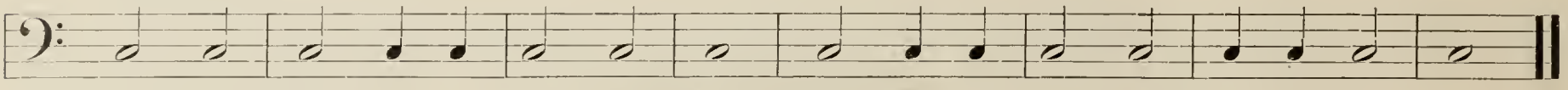
Exercises for the Free Use of the Ankle-Joint.

TO BE PLAYED BY THE TOES, WITHOUT ANY *up-and-down* MOVEMENT OF THE KNEES.

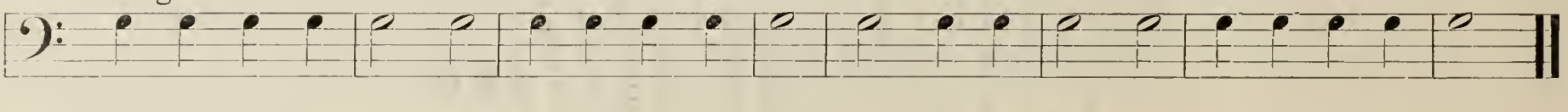
1. Right foot.



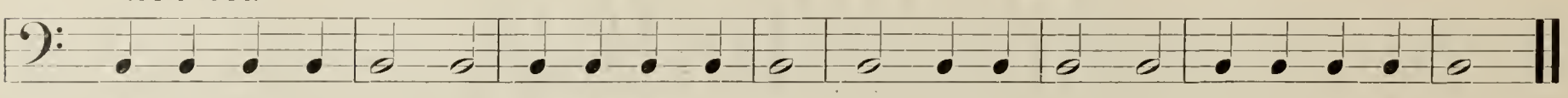
Left foot.



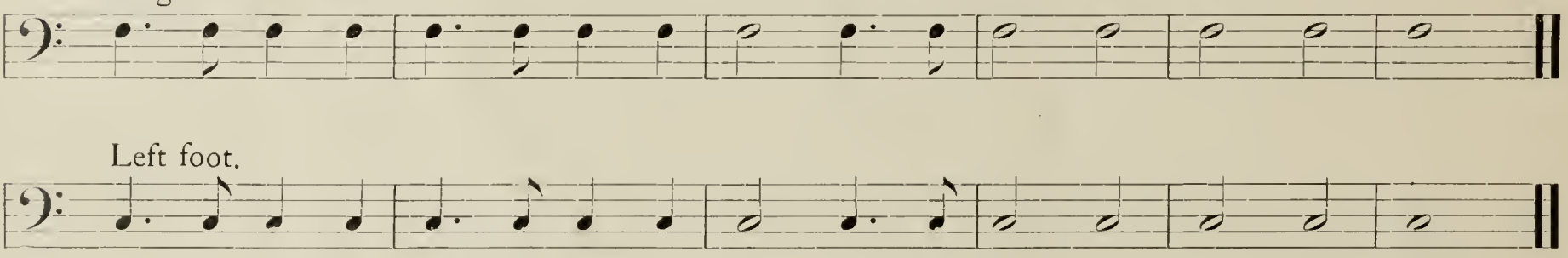
2. Right foot.



Left foot.



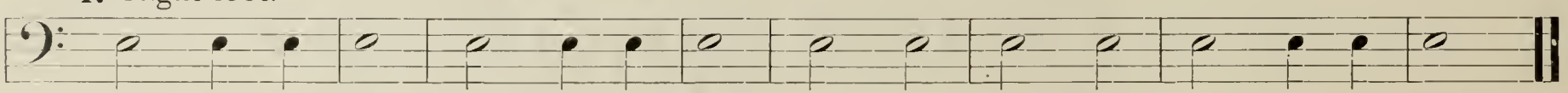
3. Right foot.



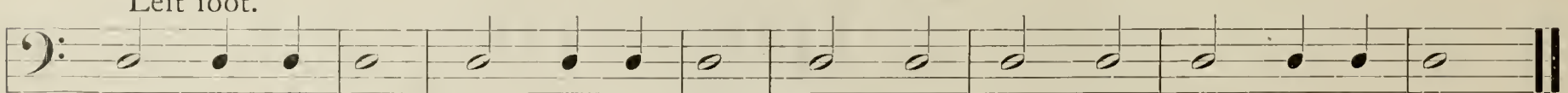
Left foot.

TO BE PLAYED BY THE HEELS, WITHOUT USING THE WEIGHT OF THE LEG.

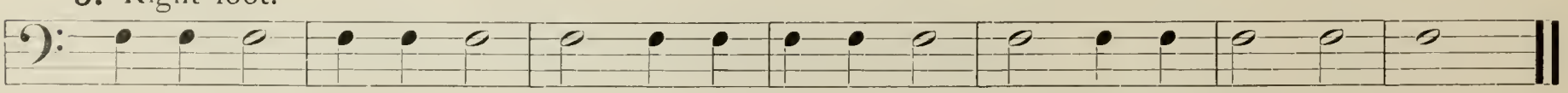
4. Right foot.



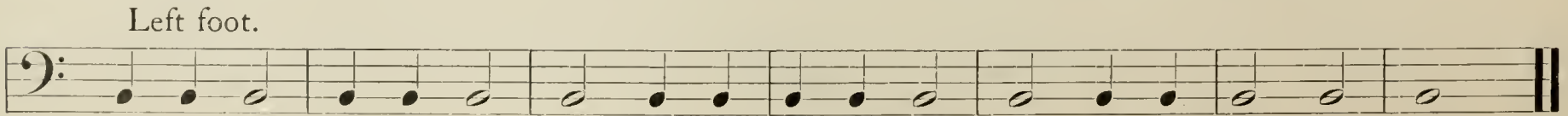
Left foot.



5. Right foot.



Left foot.



Nothing is more fatal to good pedalling than the vicious habit of shuffling along the seat — to the right-hand side in search of high notes, to the left-hand side in search of low notes.

The pupil should never forget that by changing his position on the organ-stool he alters every one of the measurements from his body to the pedal-keys.

The following (Figs. 40 and 41) will make this plain :

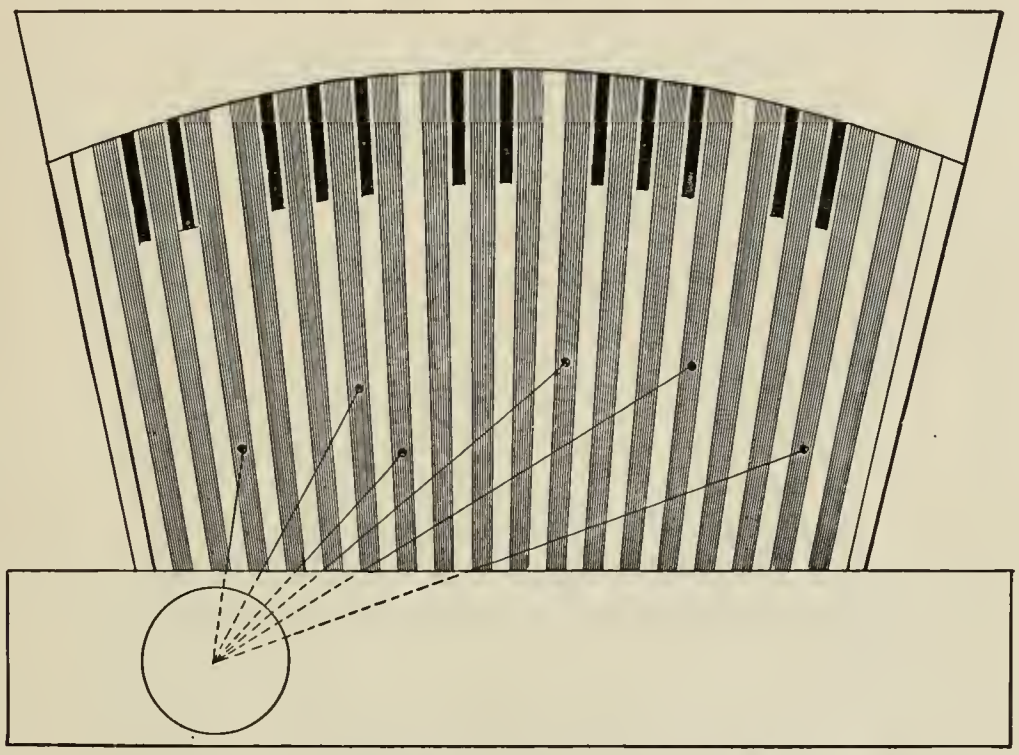


Fig. 40. — Measurements from left-hand side.

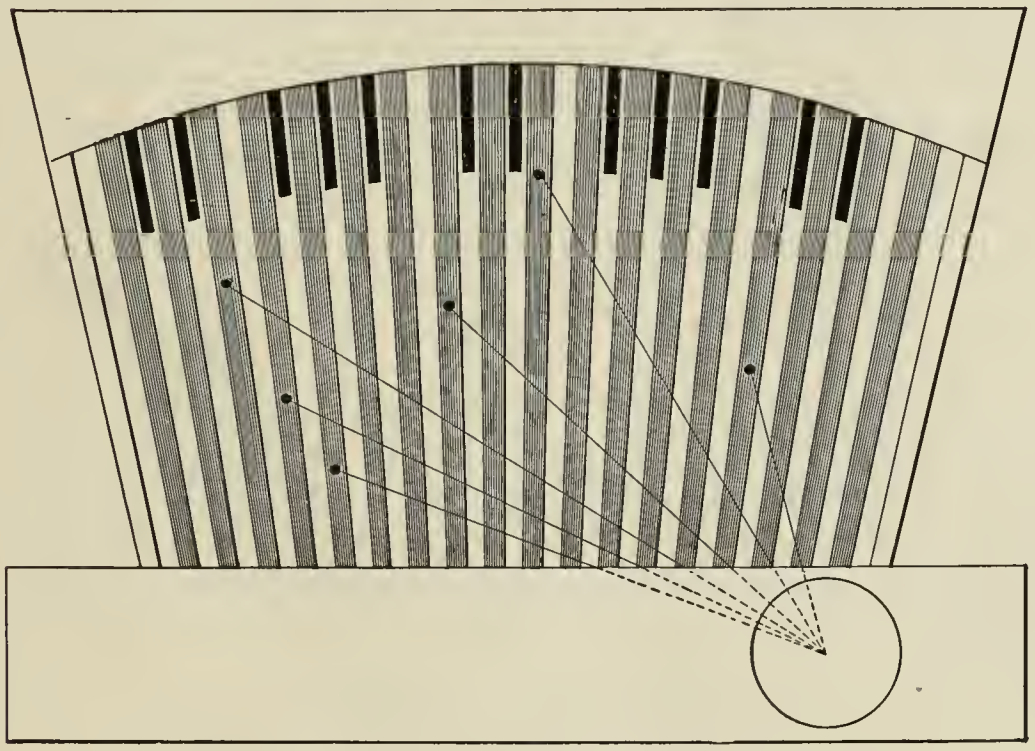


Fig. 41. — Measurements from right-hand side.

The knees should, as far as possible, when playing in the centre as well as at the extremities of the pedal-board, *remain over the feet as they move.*

When the sign ∨ is placed *over* a note, that note is to be played with the *right toe*. When the same sign ∧ is placed *under* a note, that note is to be played with the *left toe*.

When the sign ○ is placed *over* a note, that note is to be played with the *right heel*. When the same sign ○ is placed *under* a note, that note is to be played with the *left heel*.

Method of Pedalling without Looking at the Feet.

Having taken a proper position on the organ-seat as described on page 30, the student should now learn the system of finding different notes on the pedals by *feeling with his toes*. This is done by discovering the gaps between the short keys, corresponding exactly to the open spaces at the back of the white keys of a pianoforte between B♭ and C♯, and E♭ and F♯. The position of these spaces is shown by 1, 2, 3, 4, 5, 6 in Fig. 42:

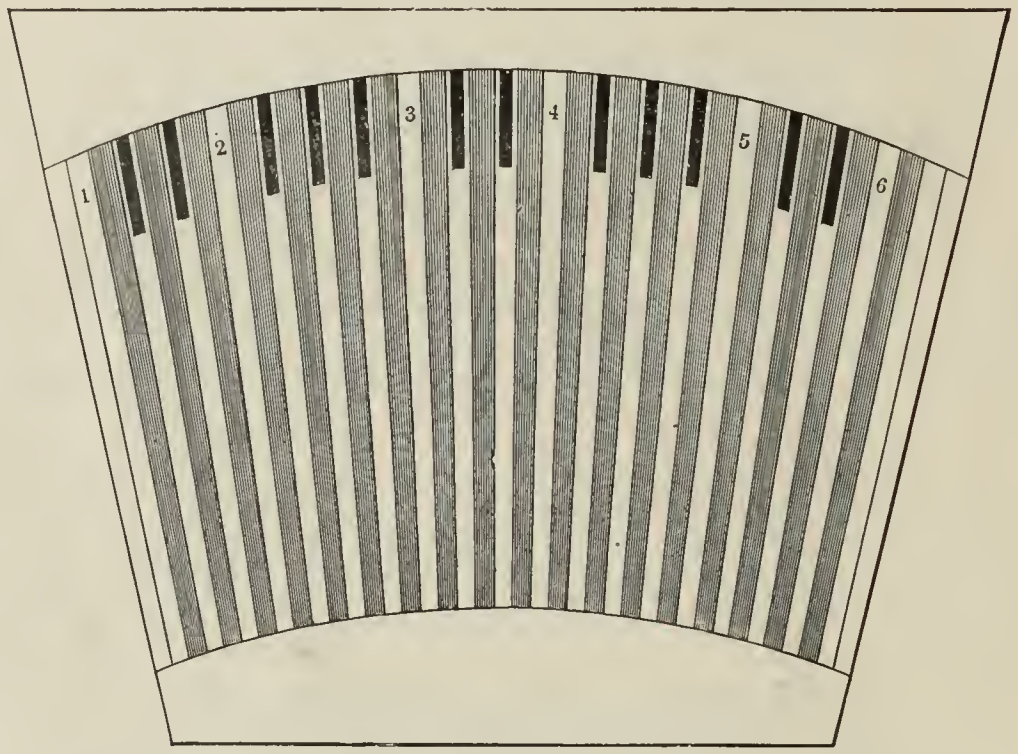


Fig. 42.

It will be seen that when the foot is thrust into 2, the flat of the foot will be over the extreme ends of the keys E and F; when into 3, over B and C; when into 4, over E and F; and so on.

Having drawn some 16-foot pedal-stops and coupled the Great (up to Principal) to the pedals, the pupil should be asked to find the gaps and *place his foot in them* without causing the pipes to speak. Thus:

Find 5 with the right foot. (Prove it by making B♭ or C♯ speak.)

Find 2 with the left foot. (Prove it by touching F♯.)

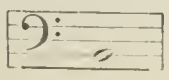
Find 4 with the right foot. (Prove it by touching E♭ or F♯.)

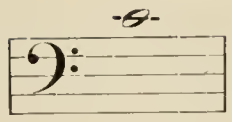
Find 6 with the right foot. (Prove it by touching E♭.)

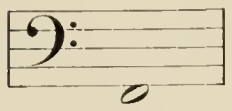
Find 1 with the left foot. (Prove it by touching C♯).

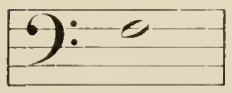
Find 3 with the left foot. (Prove it by touching B♭ or C♯.)

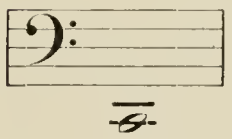
When the pupil has become quite familiar with the process of finding these spaces, he may proceed to find the notes lying near them and make them sound, placing his foot firmly on the pedal-keys. Thus:

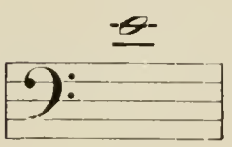
Find 3 with the left foot. Then, after *feeling the sides of the short keys* B♭ and C♯, draw the foot out and strike  firmly and without any hesitation, making it sound freely.

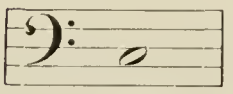
Find 5 with the right foot, then strike 

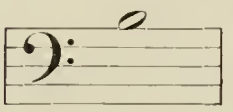
Find 2 with the left foot, then strike 

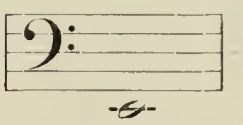
Find 4 with the right foot, then strike 

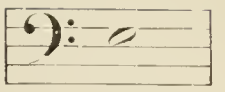
Find 1 with the left foot, then strike 

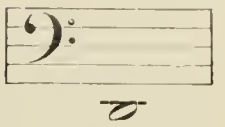
Find 6 with the right foot, then strike 

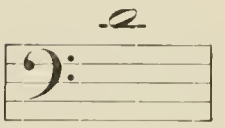
Find 3 with the left foot, then strike 

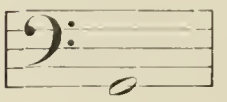
Find 5 with the right foot, then strike 

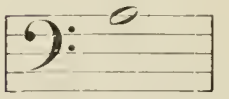
Find 2 with the left foot, then strike 

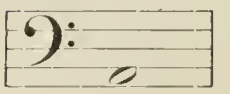
Find 4 with the right foot, then strike 

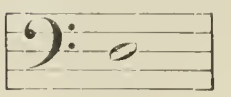
Find 1 with the left foot, then strike 

Find 5 with the right foot, then strike 

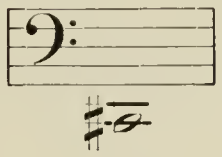
Find 2 with the left foot, then strike 

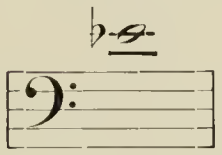
Find 5 with the right foot, then strike 

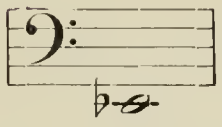
Find 3 with the left foot, then strike 

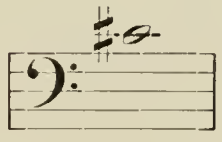
Find 4 with the right foot, then strike 

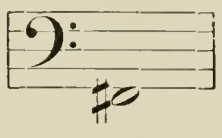
It will be found that the position of the short keys is discovered with great ease by this method.

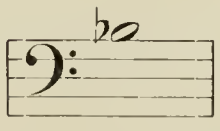
From 1 find  with left foot.

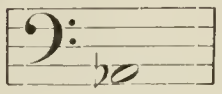
From 6 find  with right foot.

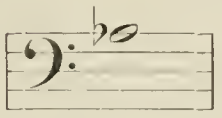
From 2 find  with left foot.

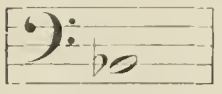
From 5 find  with right foot.

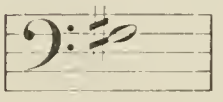
From 2 find  with left foot.

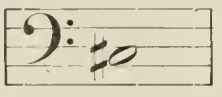
From 5 find  with right foot.

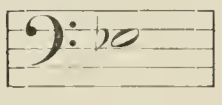
From 3 find  with left foot.

From 5 find  with right foot.

From 3 find  with left foot.

From 4 find  with right foot.

From 3 find  with left foot.

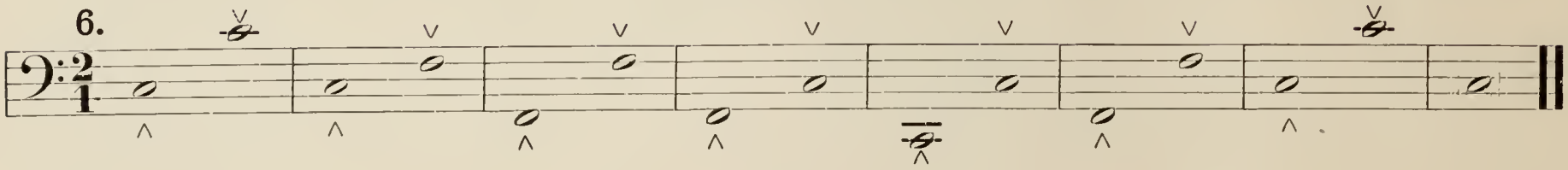
From 4 find  with right foot.

This method of feeling for the whereabouts of notes is exactly that pursued by a blind man commencing to play on the manuals. He feels for the spaces between the black keys, and thus gets his bearings. Having no eyes in our toes, we cannot do better than adopt this very natural system of discovering the locality of the pedal-keys required.

Exercises for Finding Pedal-keys by Feeling with the Toes, without Looking at the Feet.

(See page 36.)

6.



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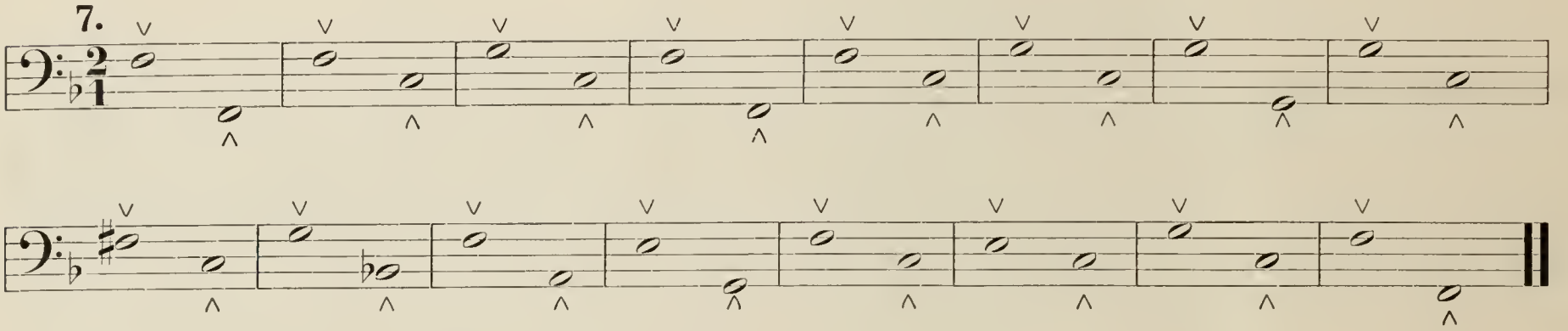

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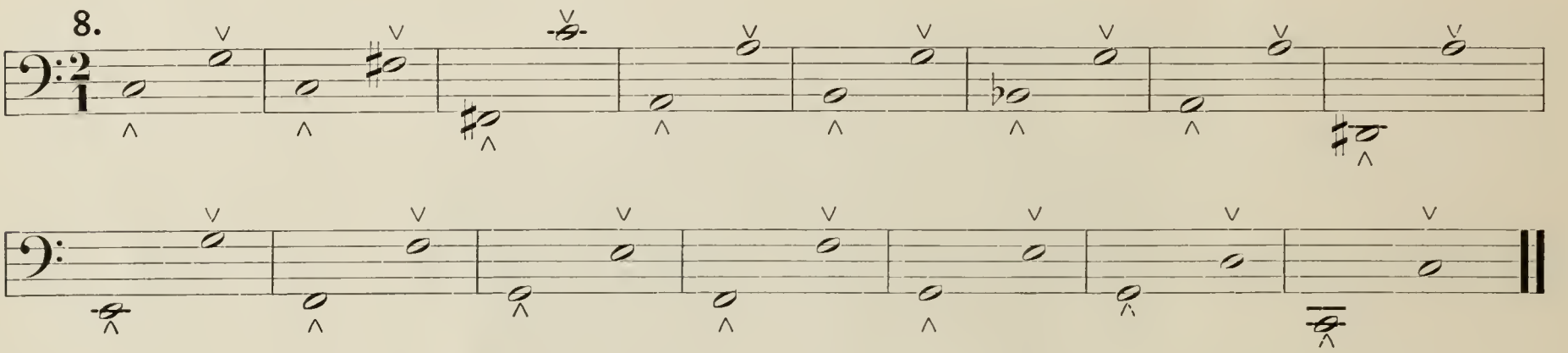

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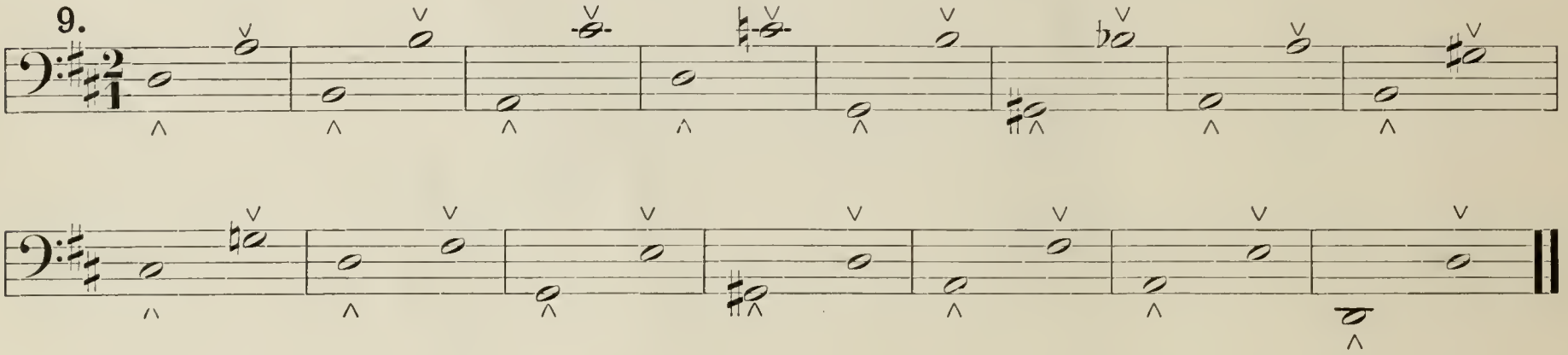

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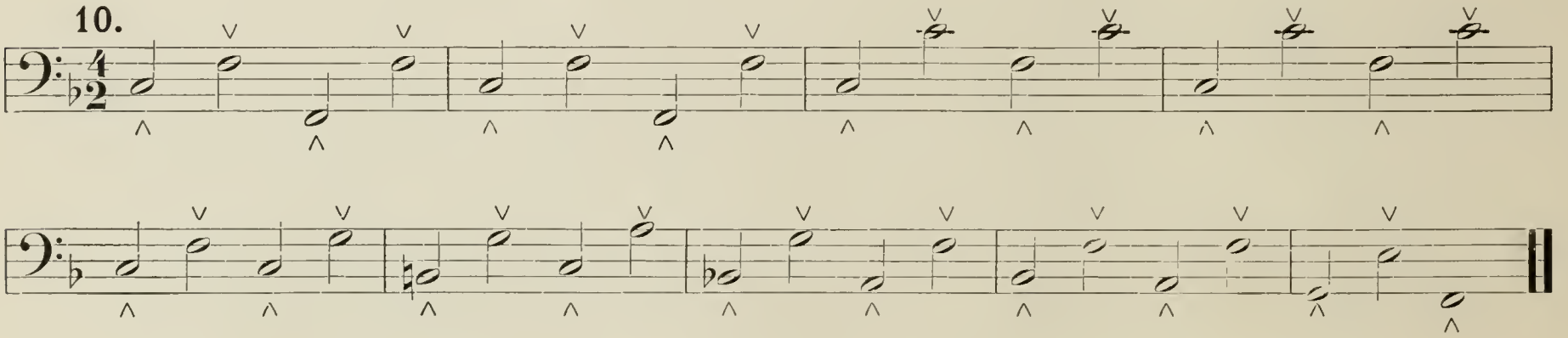
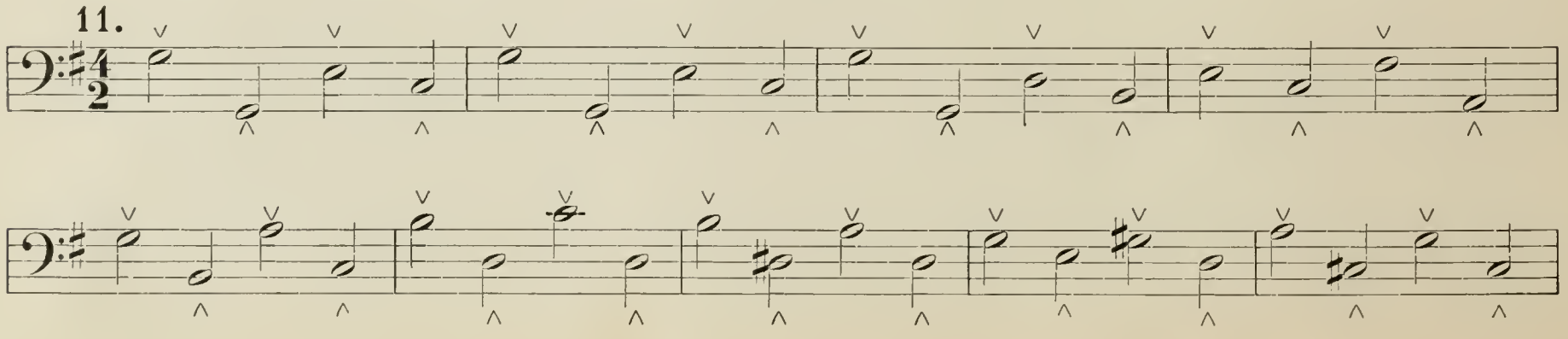
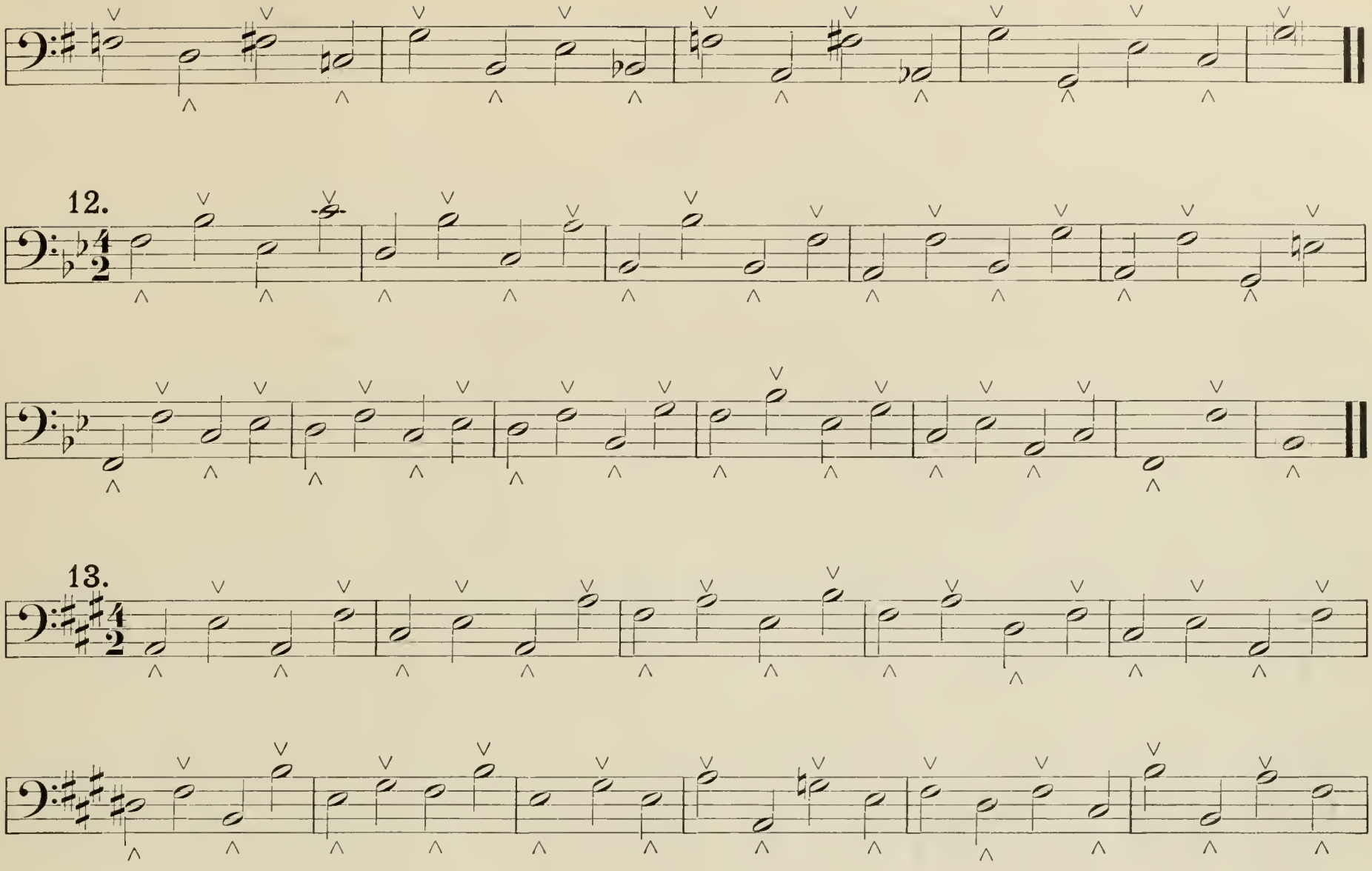


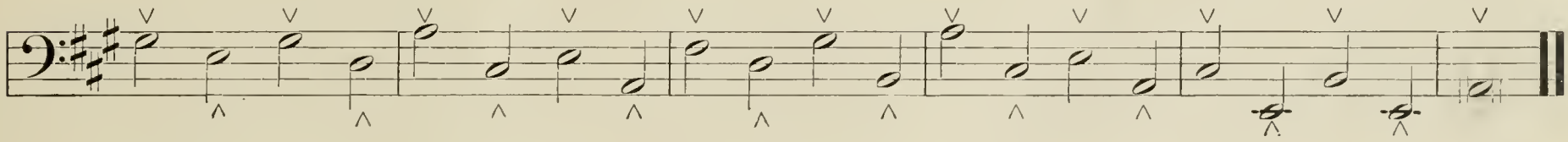
11.



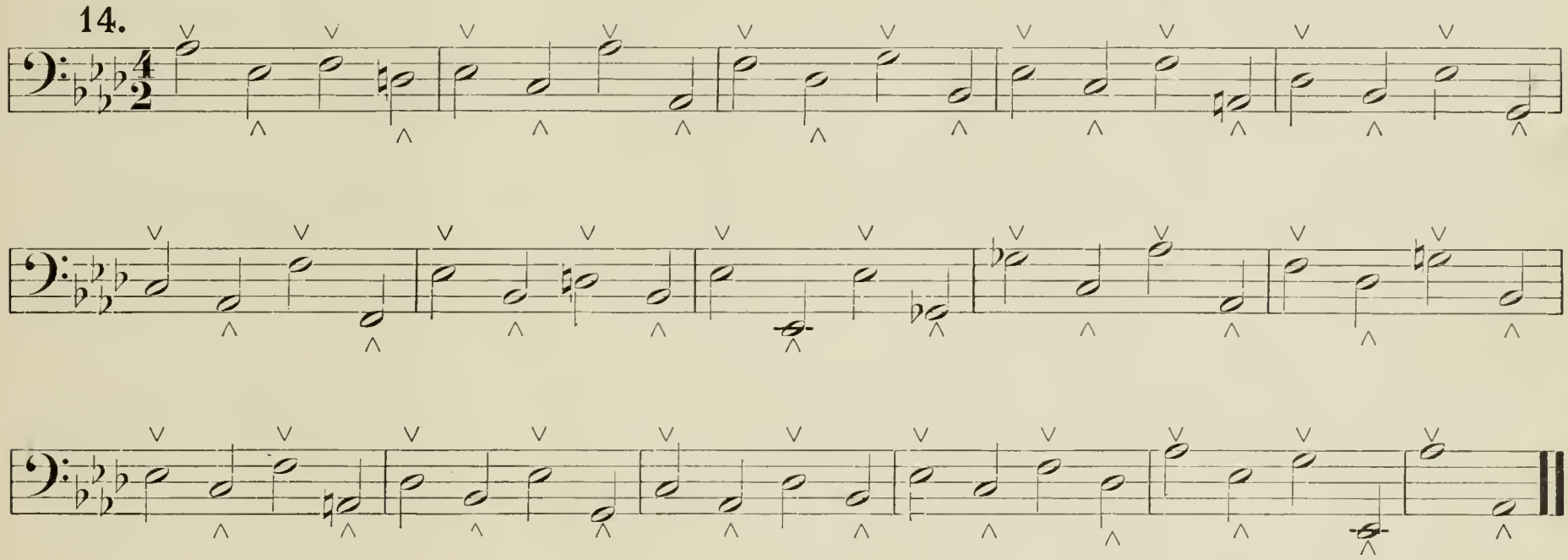


12.

13.

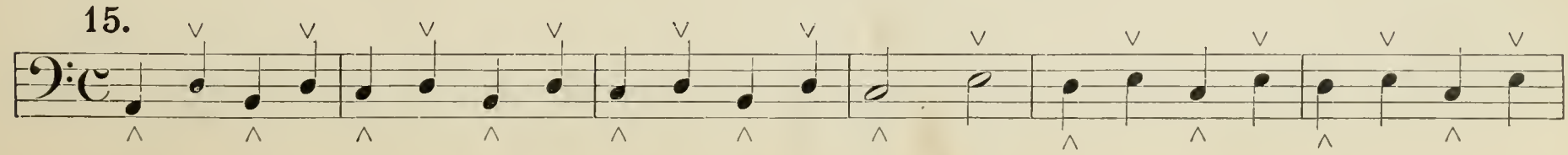


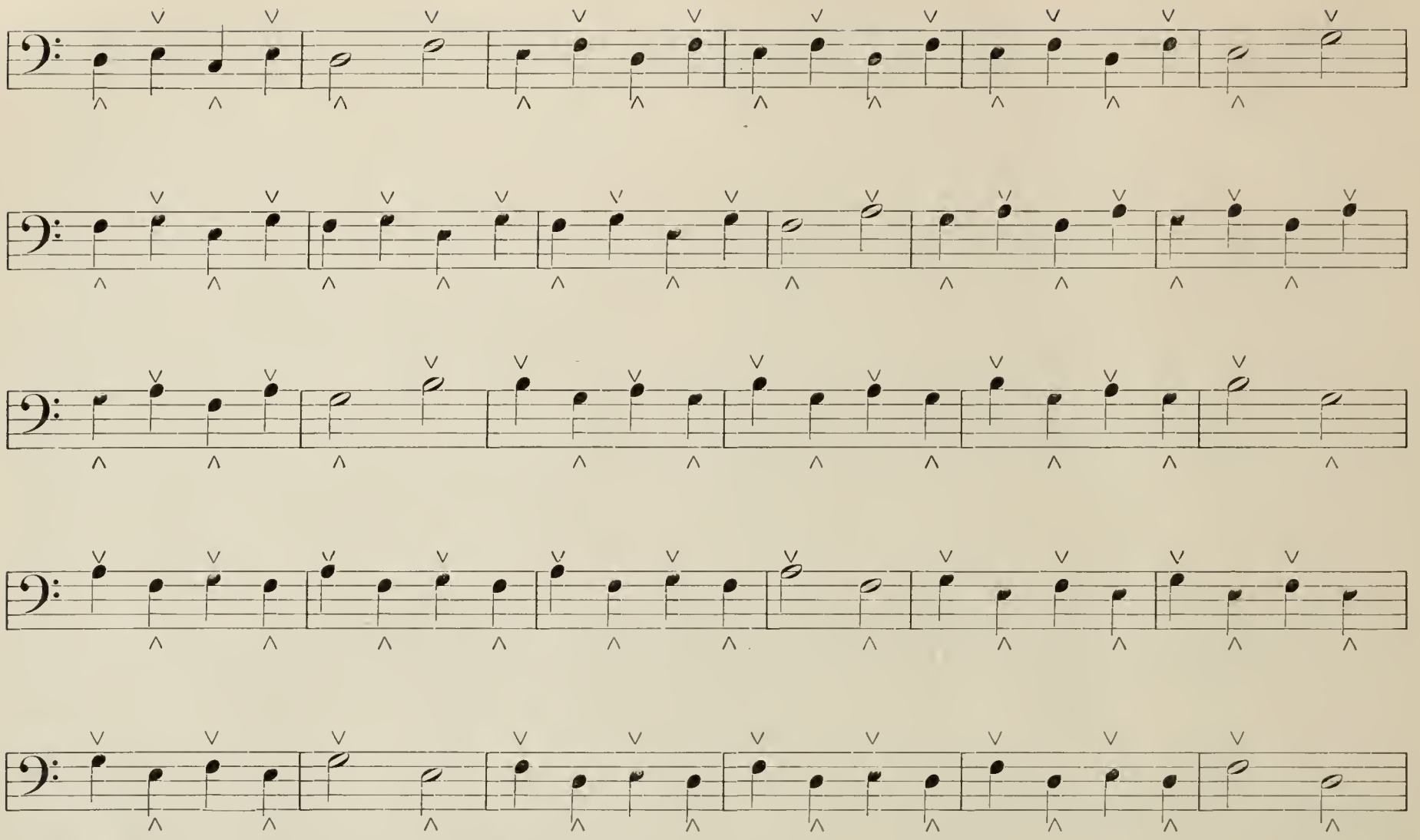
14.

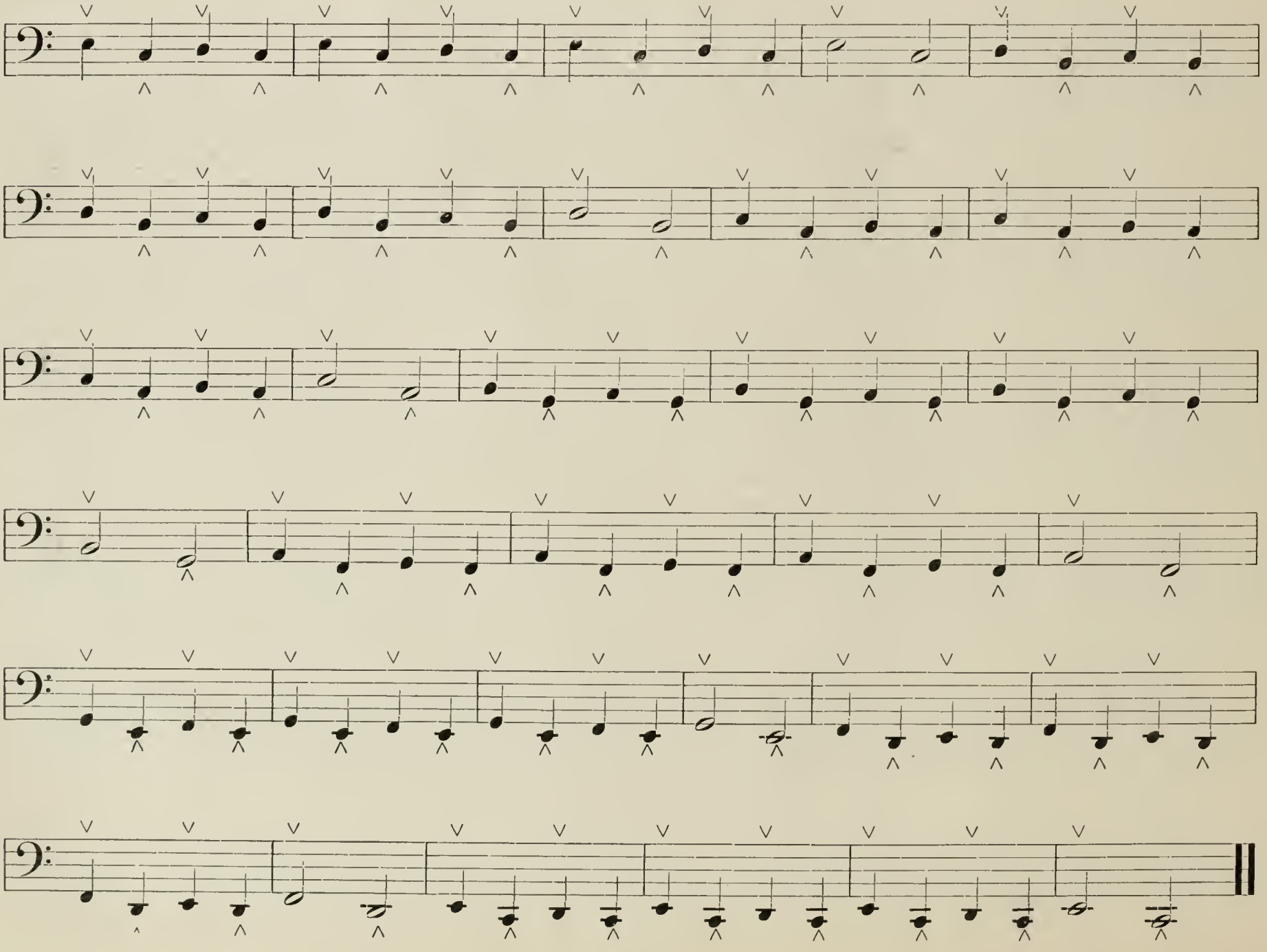


If the pupil can now place his foot on any pedal-key *without looking* and without any hesitation, he may proceed to practise exercises for alternate toes, which will serve the double purpose of rendering his ankle-joint elastic, and of accustoming him to the measurement of intervals on the pedals.

15.







The position of the toe on a sharp or flat pedal-key is shown in the following figure:

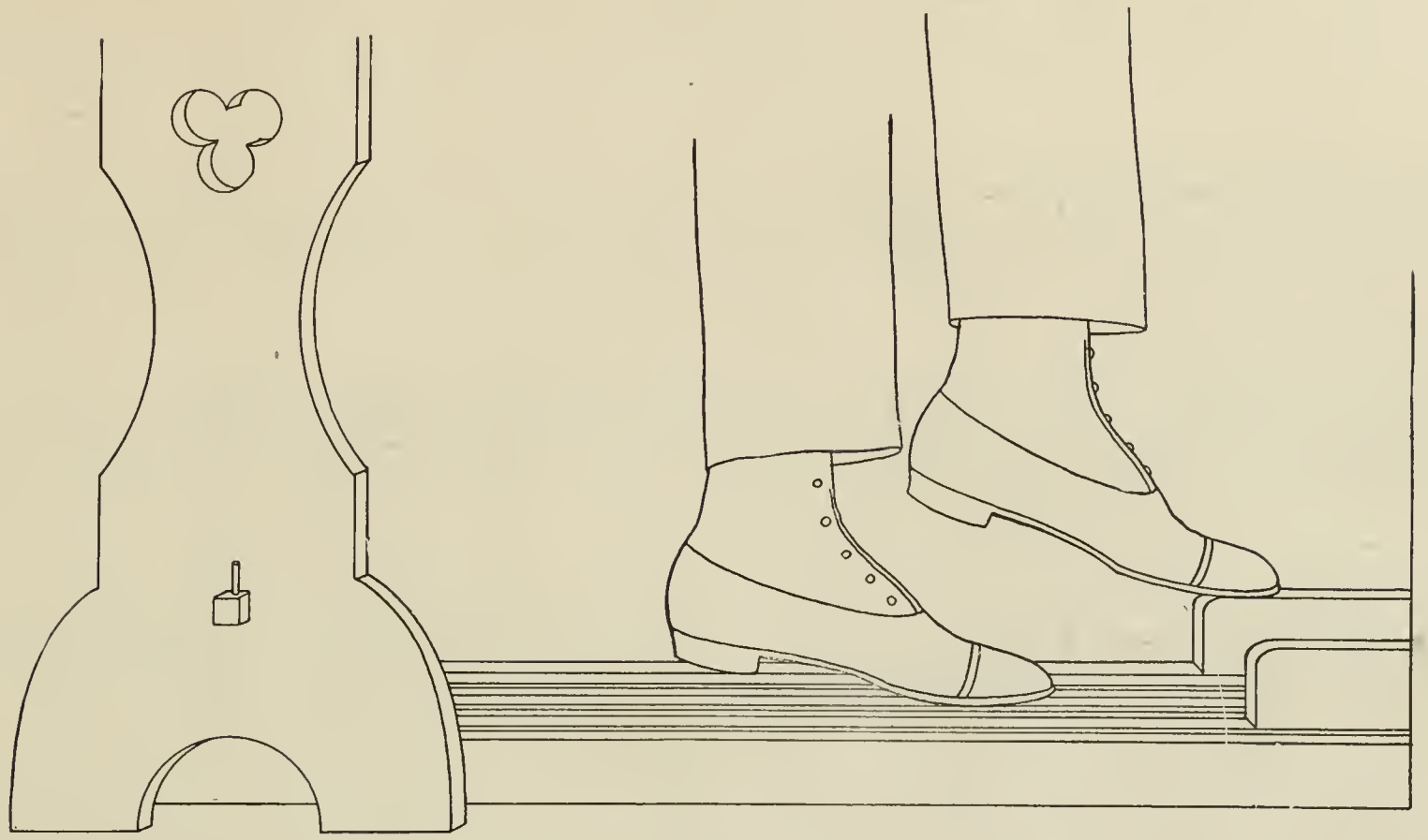
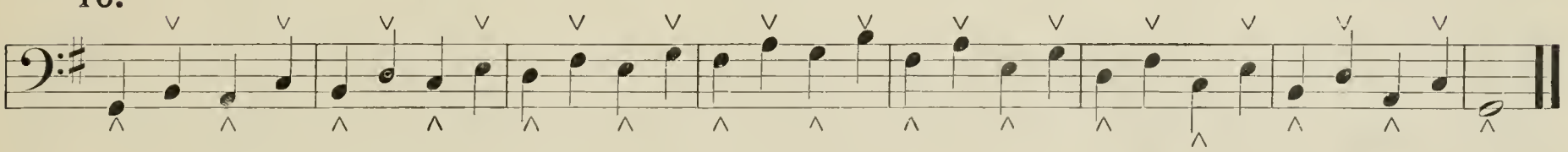


Fig. 43.

16.



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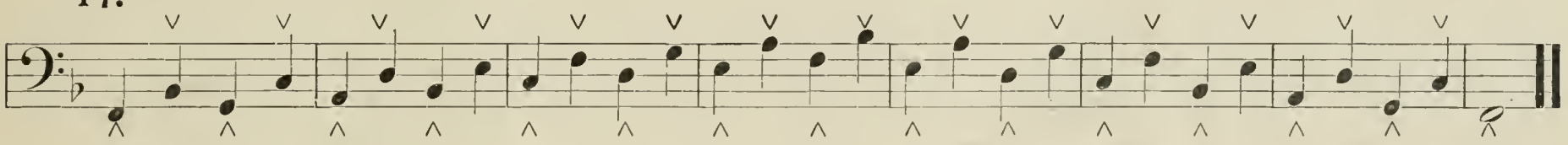

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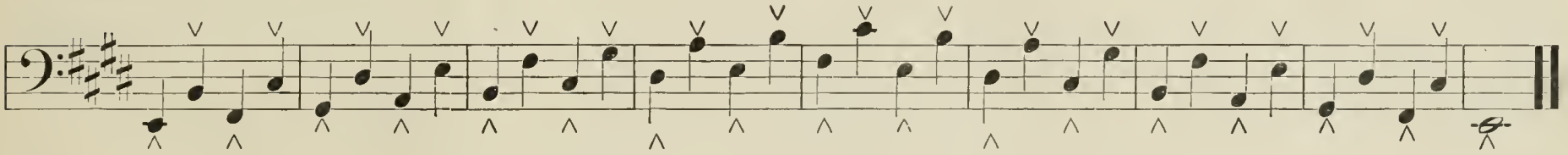

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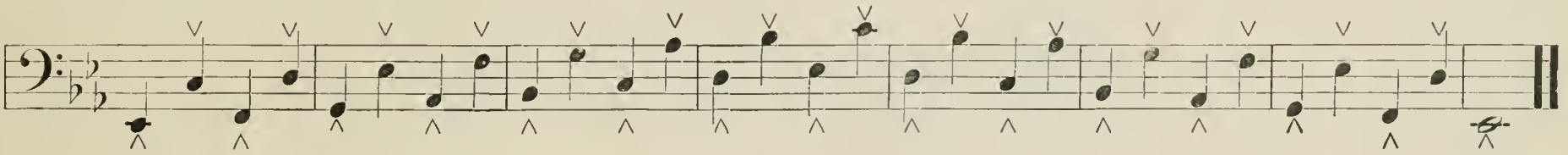

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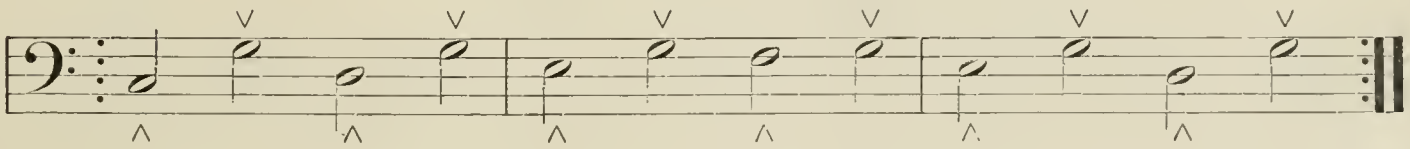

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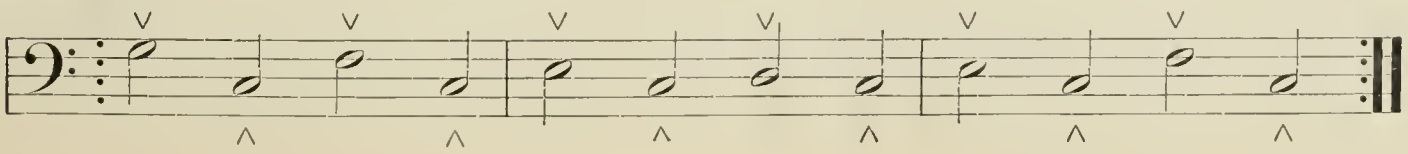

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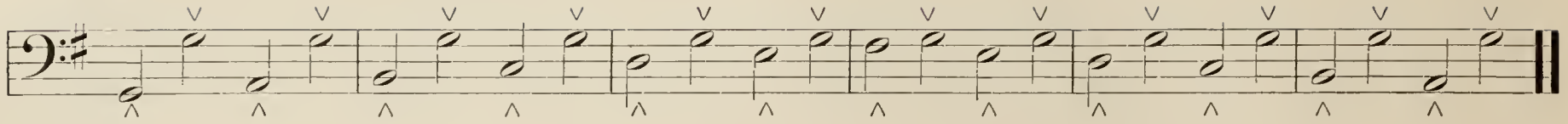

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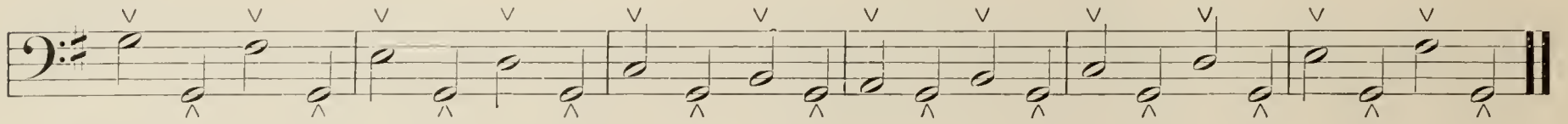

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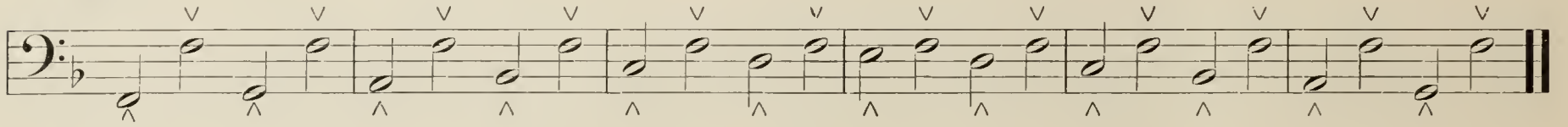

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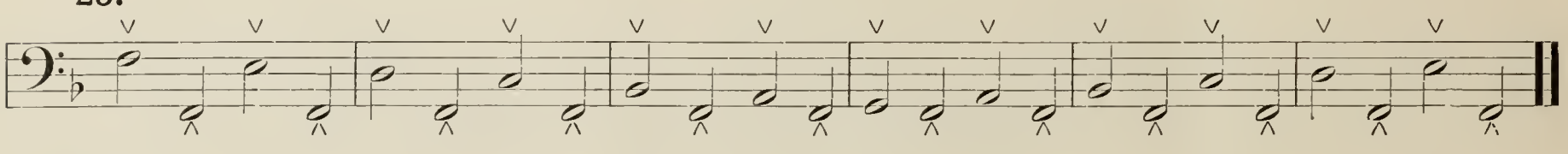

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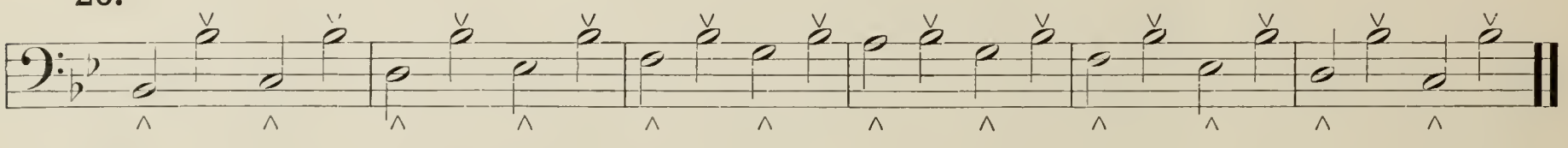

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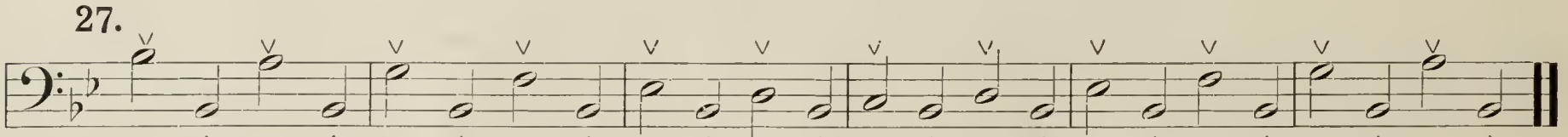

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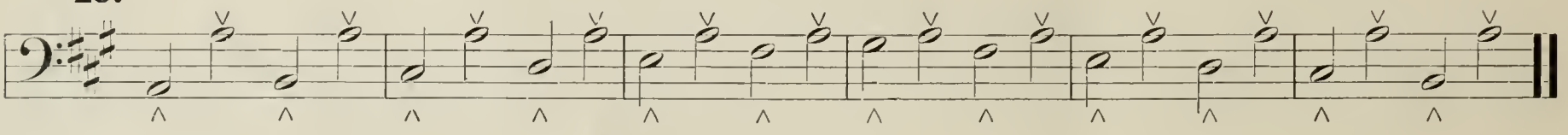

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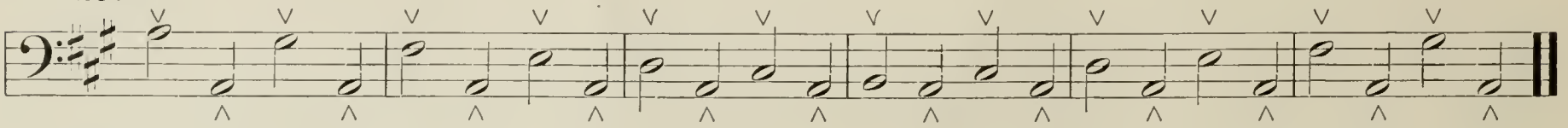

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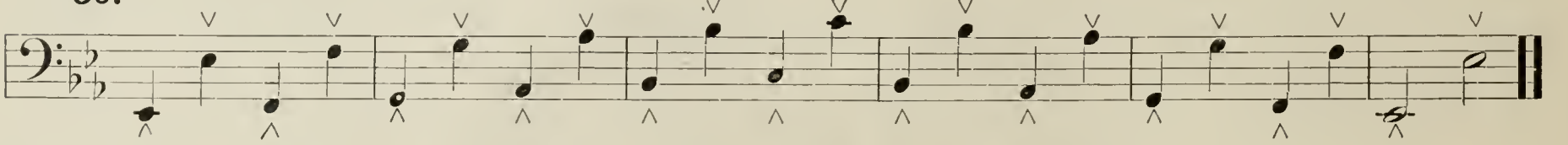

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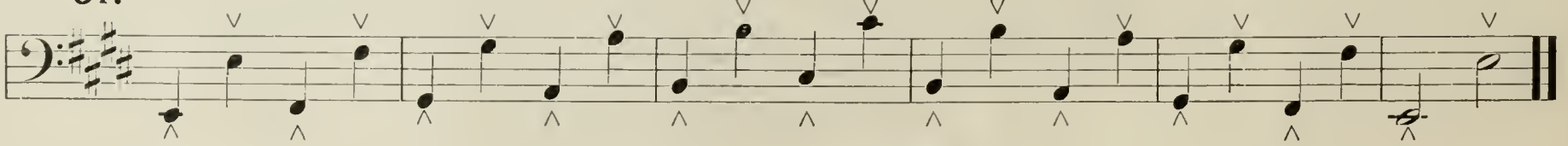

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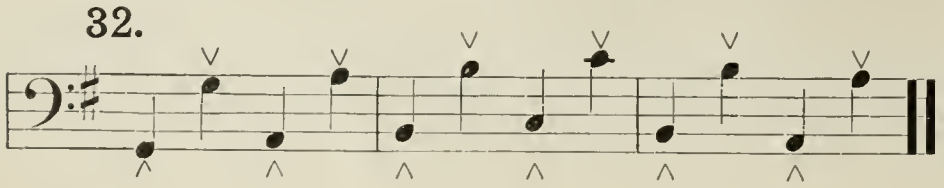

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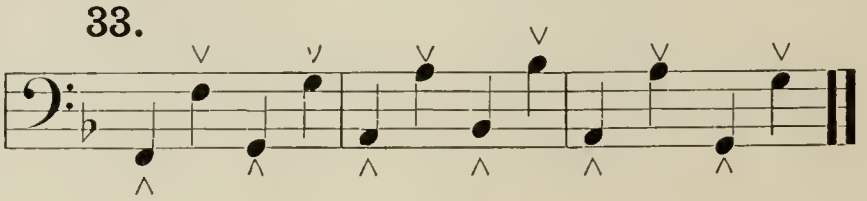

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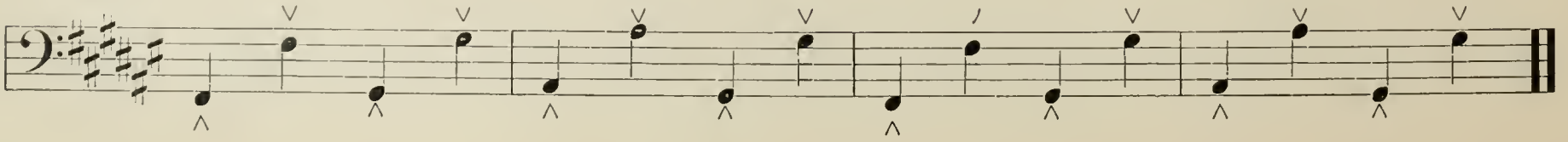


It is now time to study the manual-touch of an organ, and notice in what respect it differs from that of a pianoforte.

In the first place, an organ-key is rapidly *pressed* down, not exactly *struck*, as on the pianoforte. The key should nevertheless be pressed down with firmness and decision.

Next, no alteration as to loudness or softness is produced by the force used by the finger. In organ-playing a quite uniform touch is employed in *forte* and *piano* passages, or, in other words, the keys are touched by the fingers when only one soft stop is drawn, *exactly in the manner as if the full power* of the instrument were to be brought out. To do this habitually will require constant care and attention.

Two different sorts of "touch" will be found on organs. One, when the *key itself* is the actual lever which works the mechanism connected with it; the other, when the key only lifts a valve in the pneumatic bellows, and throws the actual leverage on to that contrivance. (Hence called the pneumatic *lever*.)

But the object of the player, when playing on either of these two kinds, remains the same, namely, to throw open the pallets in true response to his finger as regards *time*, and also to throw them open so thoroughly and rapidly that the wind shall not, as it were, *sneak* into the pipes and spoil their tone.

The former of the above "touches," namely, that in which there is *no* pneumatic lever between the key and the mechanism, will be found to vary in weight to an extent which gives great annoyance even to an experienced performer; moreover, when one row of keys is *coupled* to another, an almost new kind of touch, sometimes very heavy, is temporarily formed.

It frequently happens that, on an instrument having two, three, or four manuals, a different kind of touch is found on each manual. A good organist, if he has to use all the manuals in turn, insensibly plays on *all* with the weight or force required for the *heaviest one of them*. Hence the saying: "Adjust your touch to the heaviest row." Where an organist is constantly playing on the same instrument and has become quite familiar with it, he can afford to disregard this rule; but, when playing in public on a *strange* instrument, it will be well to bear it in mind, because, if the player should try and play a rapid scale-passage on the heaviest (not being prepared for the change), he is very likely to pass over some keys without getting any sound.

In organ-playing the back of the hand does not lie quite so flat as in pianoforte-playing. (See Fig. 44.) This is partly owing to the fact that very often considerably more pressure has to be used, as, for instance, when playing full chords on a specially heavy touch; partly to the fact that the hands have to cross and recross each other when playing on two different manuals; and also, one hand may have to go just below the other for the purpose of pressing in one of those clever and invaluable contrivances called "pneumatic combination pistons."

The fingers should press down the keys to the very bottom with a sharp *springy* motion, the action being from the knuckle-joints. The back of the hand should remain in its position, and not on any account be allowed to jump up and down with the movement of the fingers.

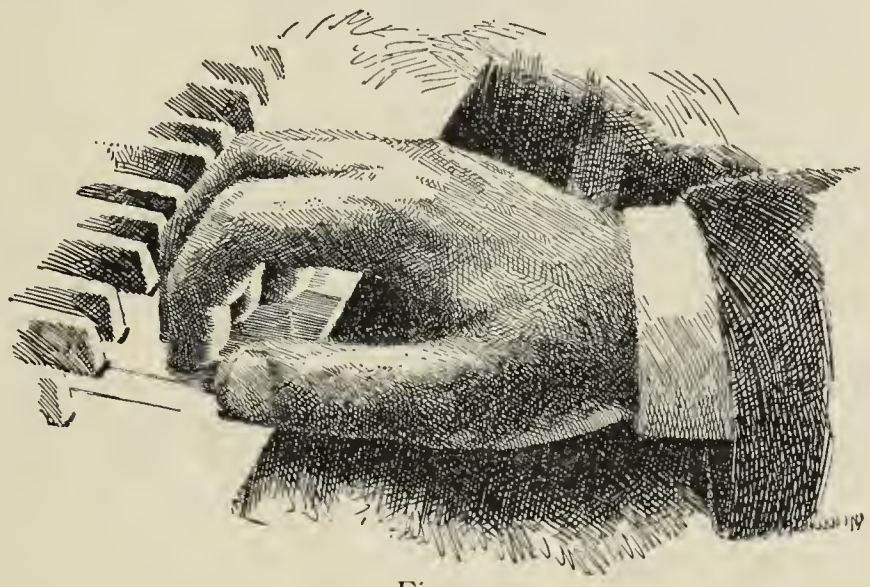


Fig. 44.

As the keys of an organ generally sink deeper than those of a pianoforte, it will be found necessary to raise the fingers rather high, *after* they have pressed down the keys. But they should not be raised so high as to give the feeling that the keys are being *hit* when the fingers *next* go down, but only *pressed down* with decision and firmness.

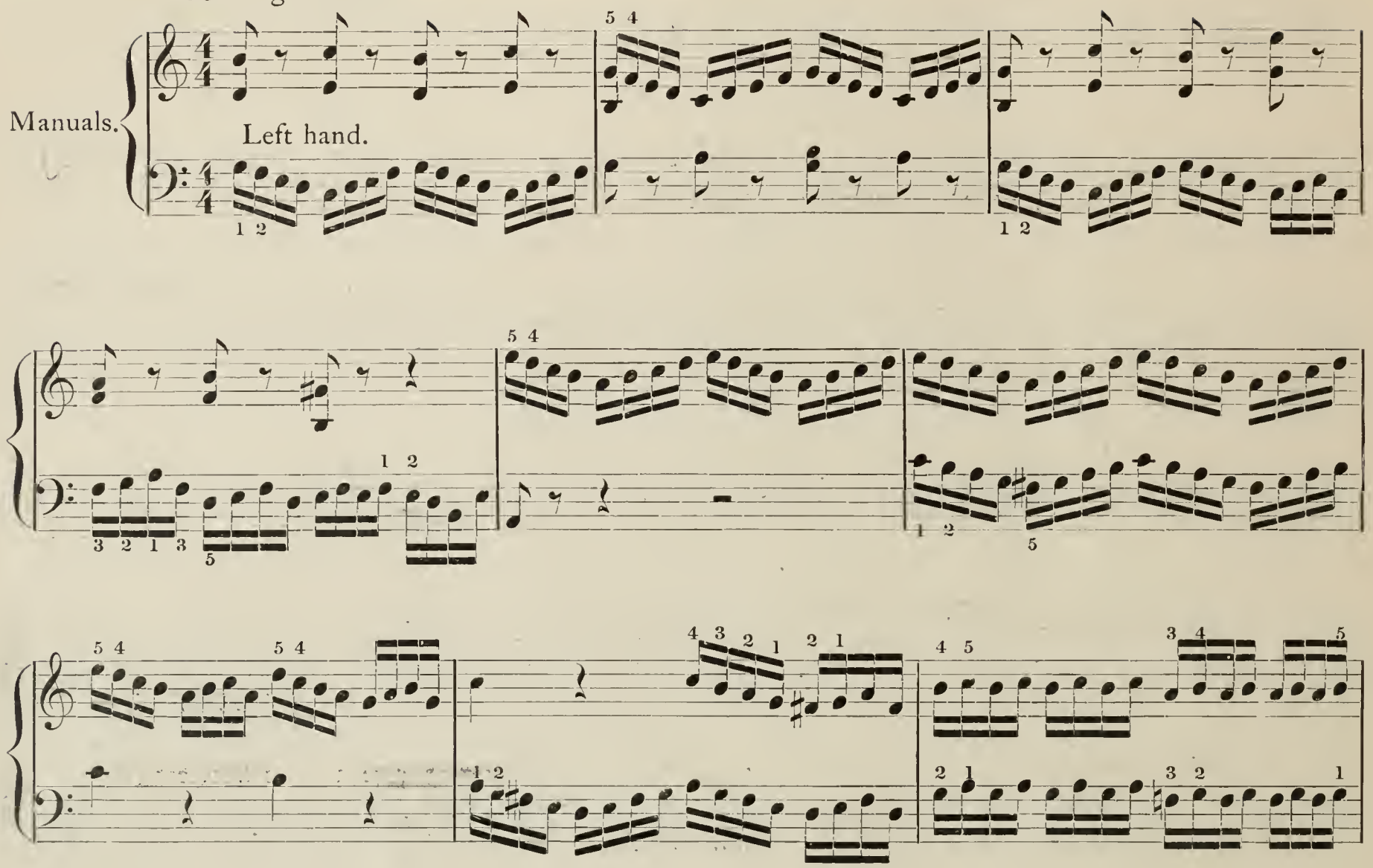
The pupil should be very careful not to stick out the elbows; it is never necessary to do so, and always awkward.

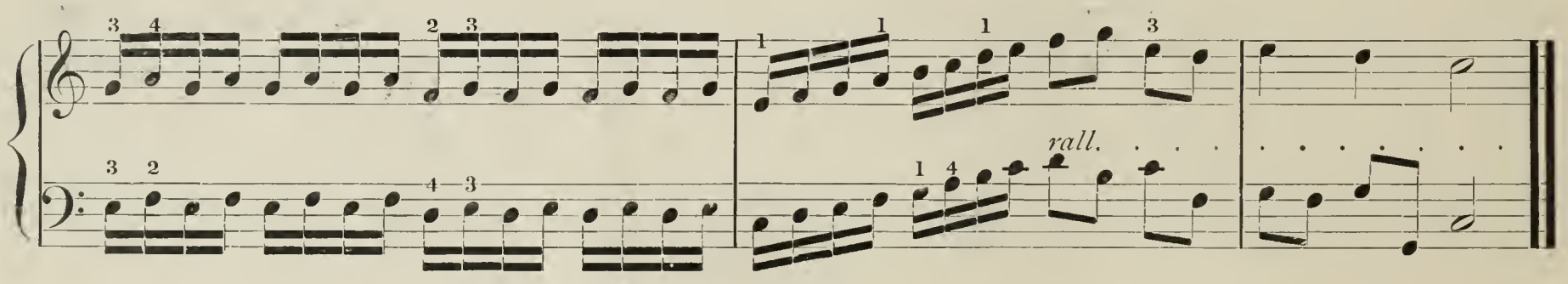
Exercises for Manual-Touch.

35. Right hand.

Manuals.

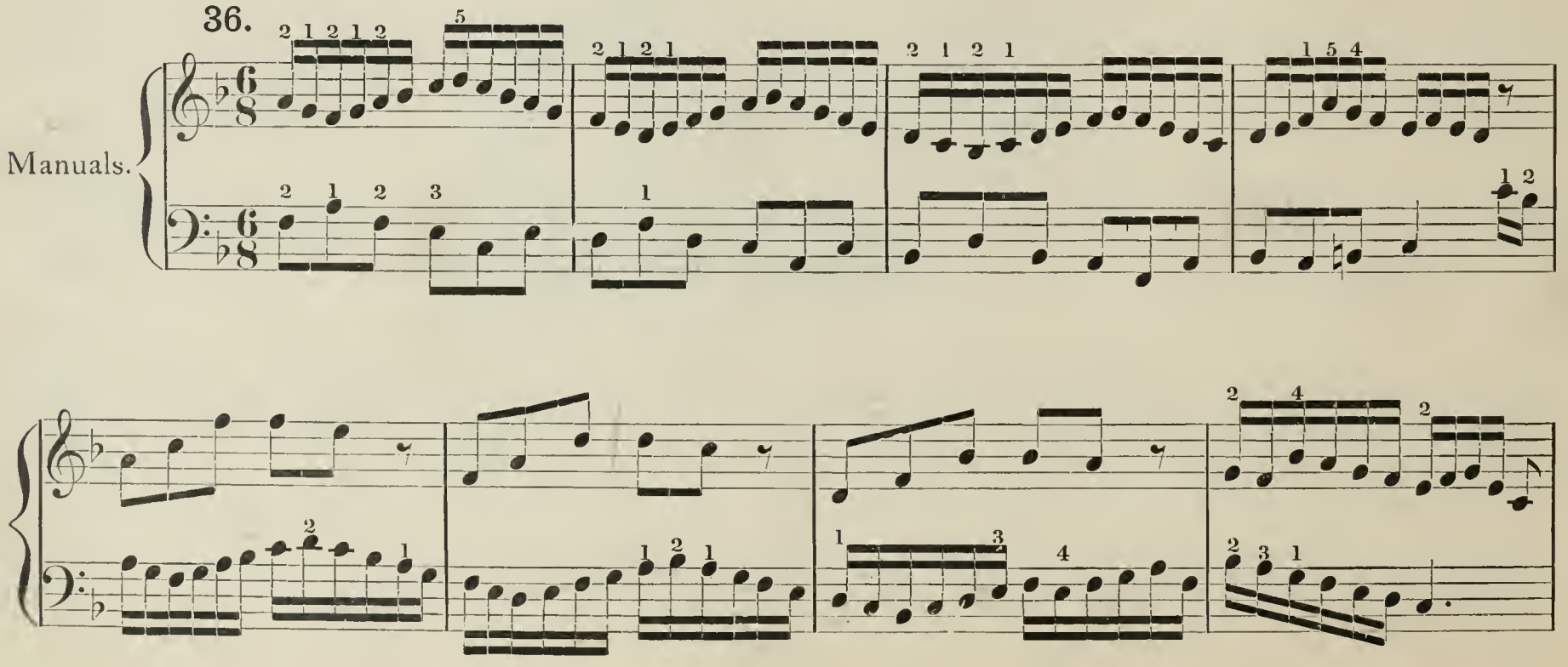
Left hand.





36.

Manuals.



37.

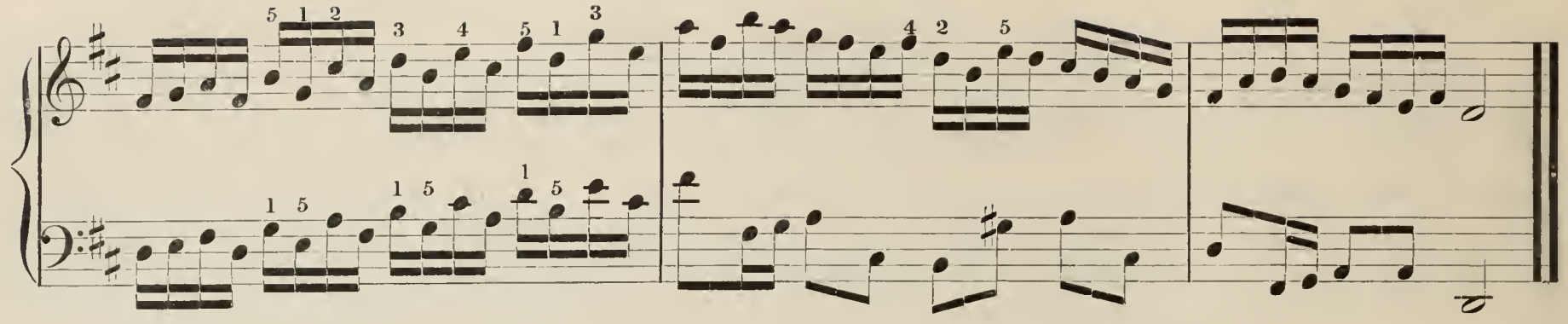
Manuals.

38.

Manuals.

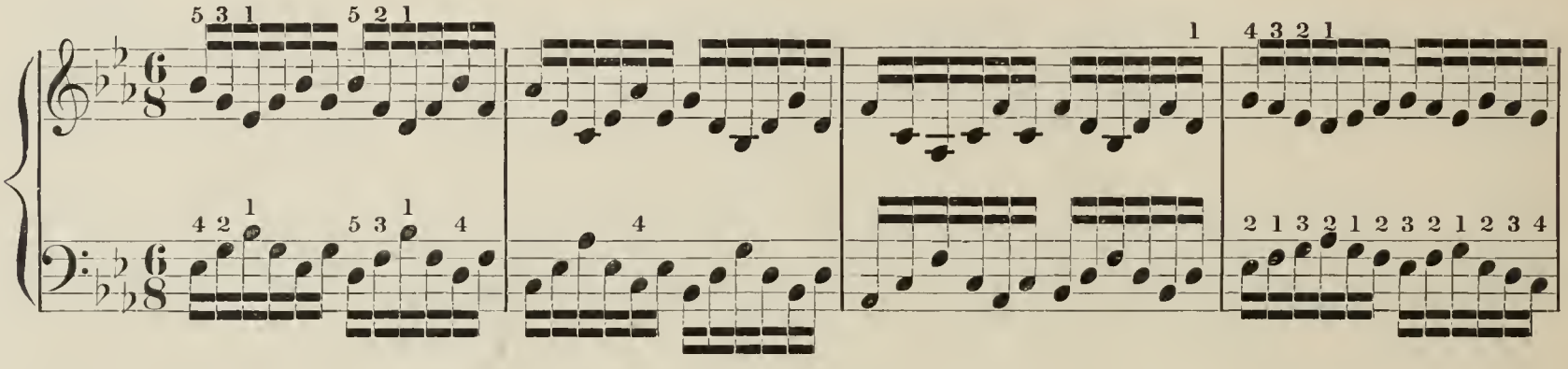
rall.

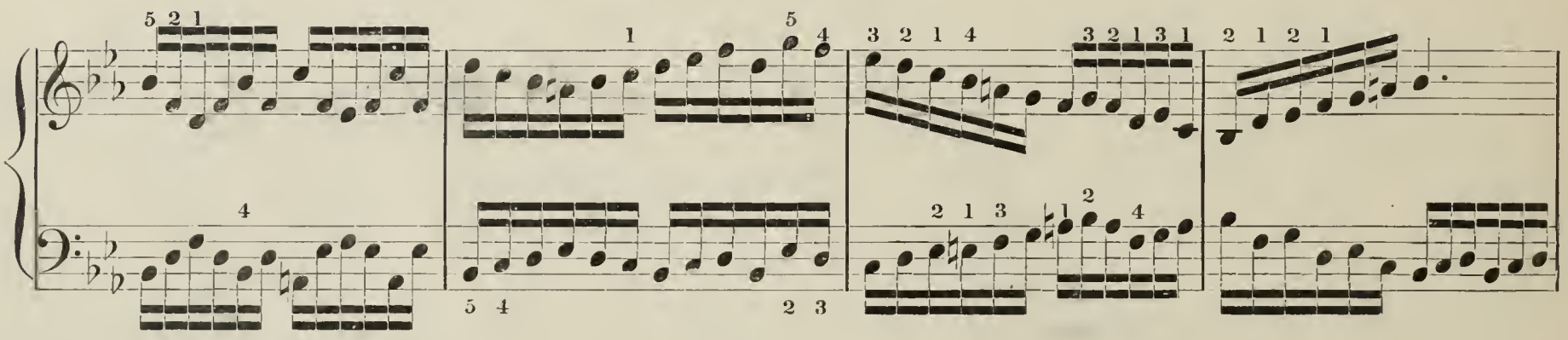
39.

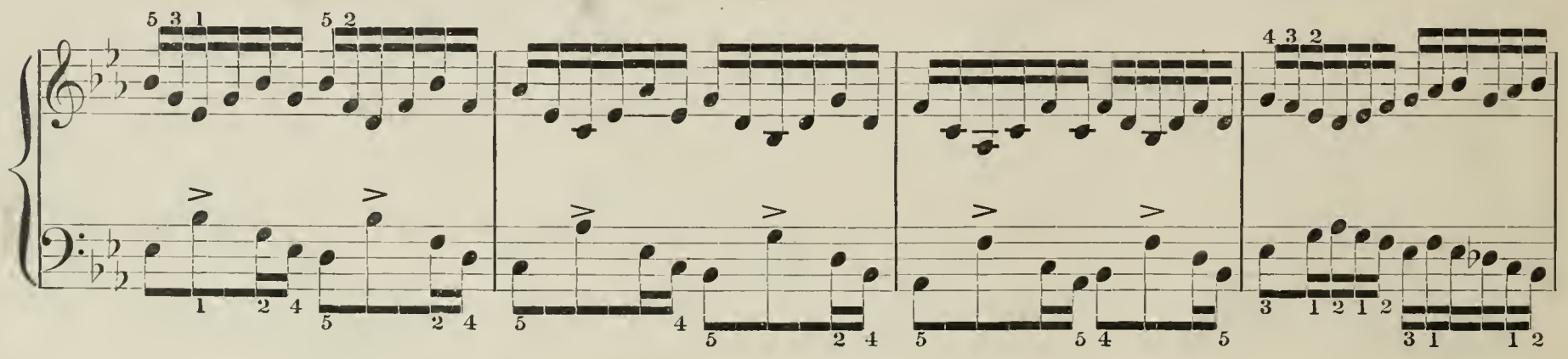


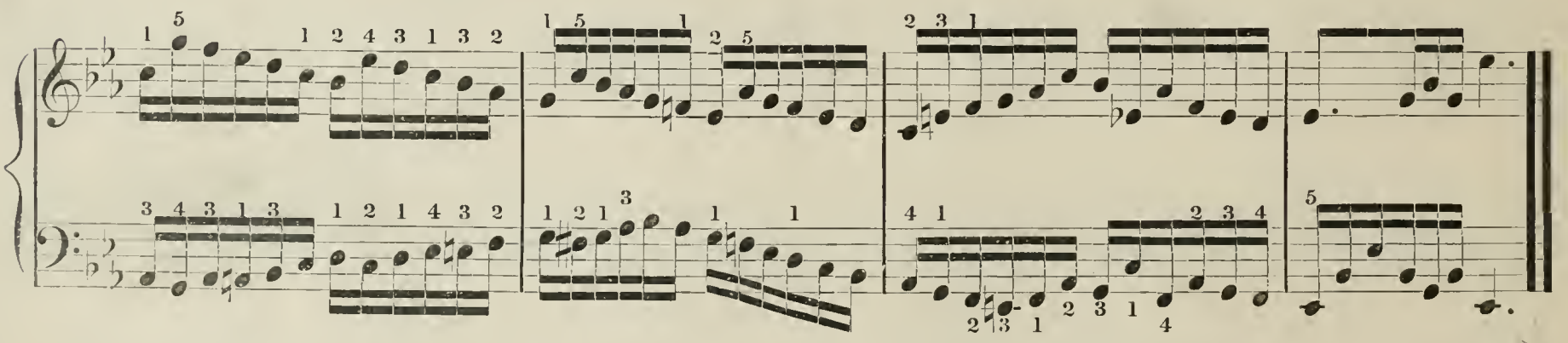
40.

Manuals.









As it is of great importance that the same decisive touch should be used for both loud and soft passages, the student is recommended to play the preceding exercises alternately on loud and soft combinations and on different rows of keys.

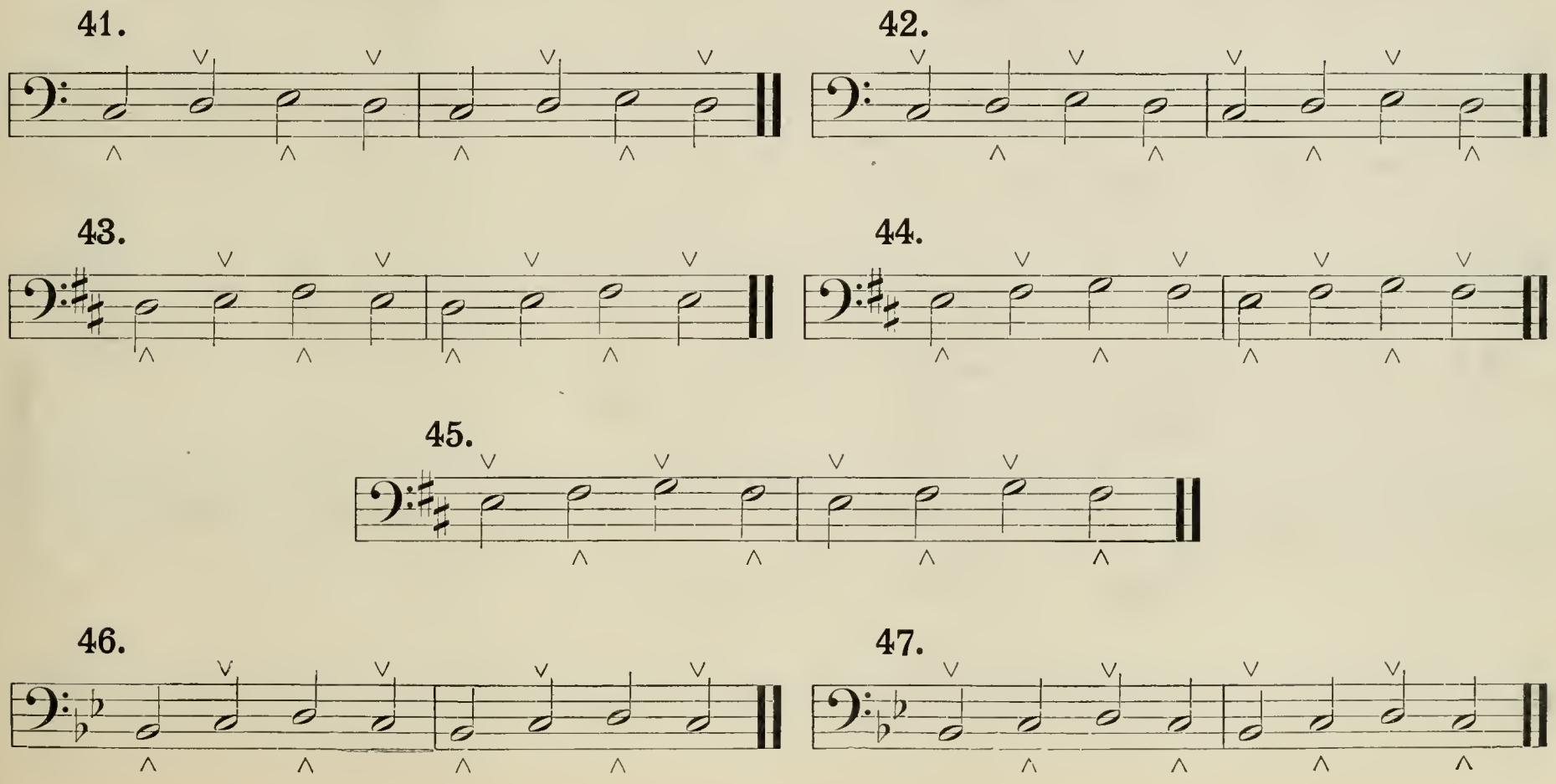
Scale-Passages on Pedals.

In playing scales on the pedals the various methods of pedalling mentioned on page 31 are generally used separately or in combination, as found most convenient in each special case. Some scales are therefore pedalled entirely with "alternate toes," some with a mixture of "toe and heel" and toes, others entirely with "toe and heel." When the feet cross each other, as in playing scale-passages with alternate toes, the heel of the foot in front must be raised sufficiently to allow the other foot a clear space in which to pass it, thus:

Fig. 45.

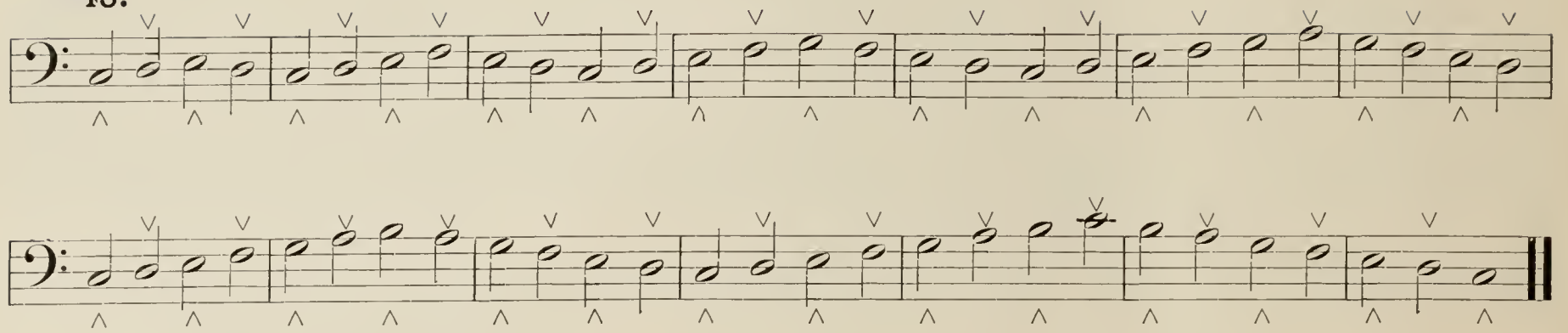
It is of the utmost importance that a good *pedal-touch* should be acquired, because, if the pedal-keys are not put down lightly, yet firmly and with decision, the large pipes speak in such an irregular and unsatisfactory manner as to entirely spoil the effect of the performance. This is specially true with regard to reed-stops.

The following exercises show how one foot must be passed behind another for a natural (long) key after a short key; round the front of the other for a sharp (short) key after a long key:



Scale-Passages for Alternate Toes.

48.



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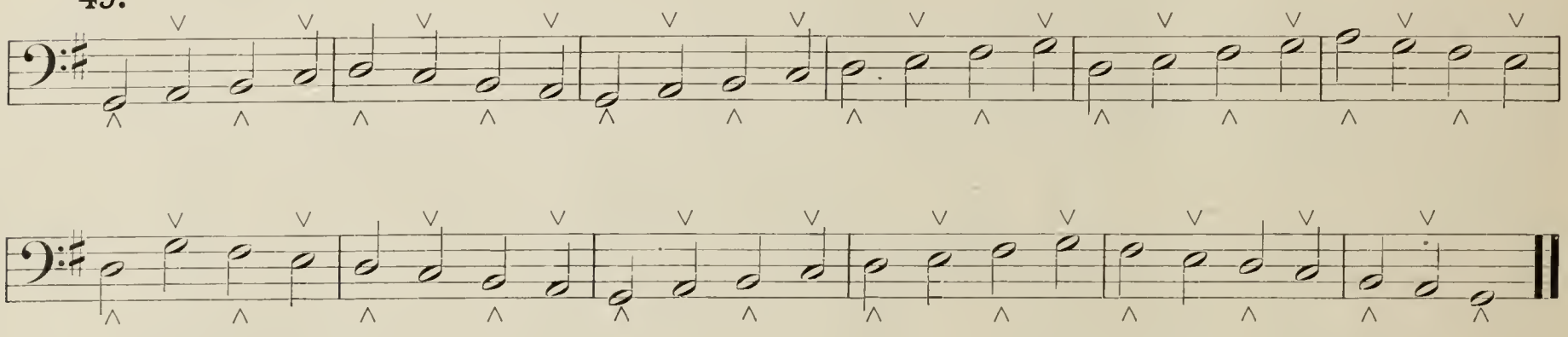

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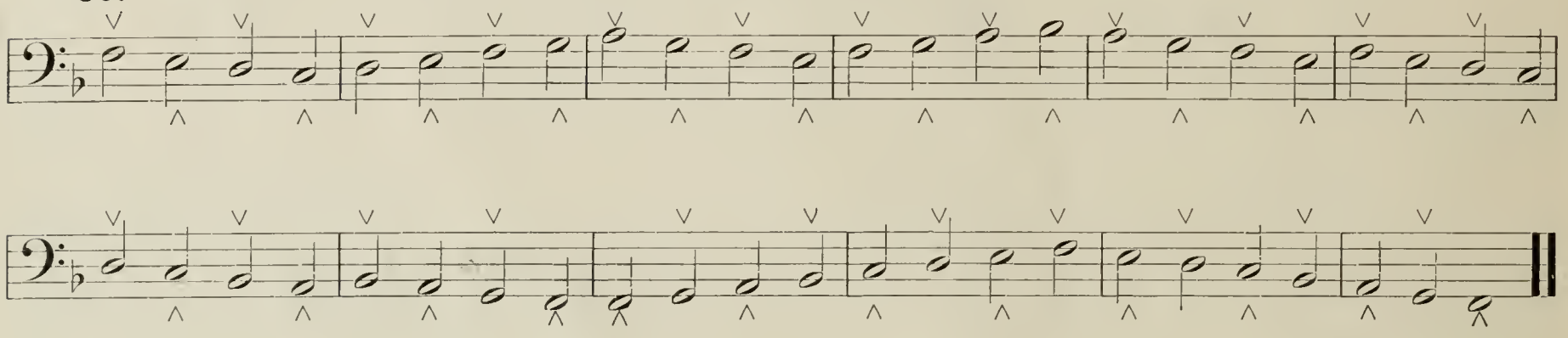

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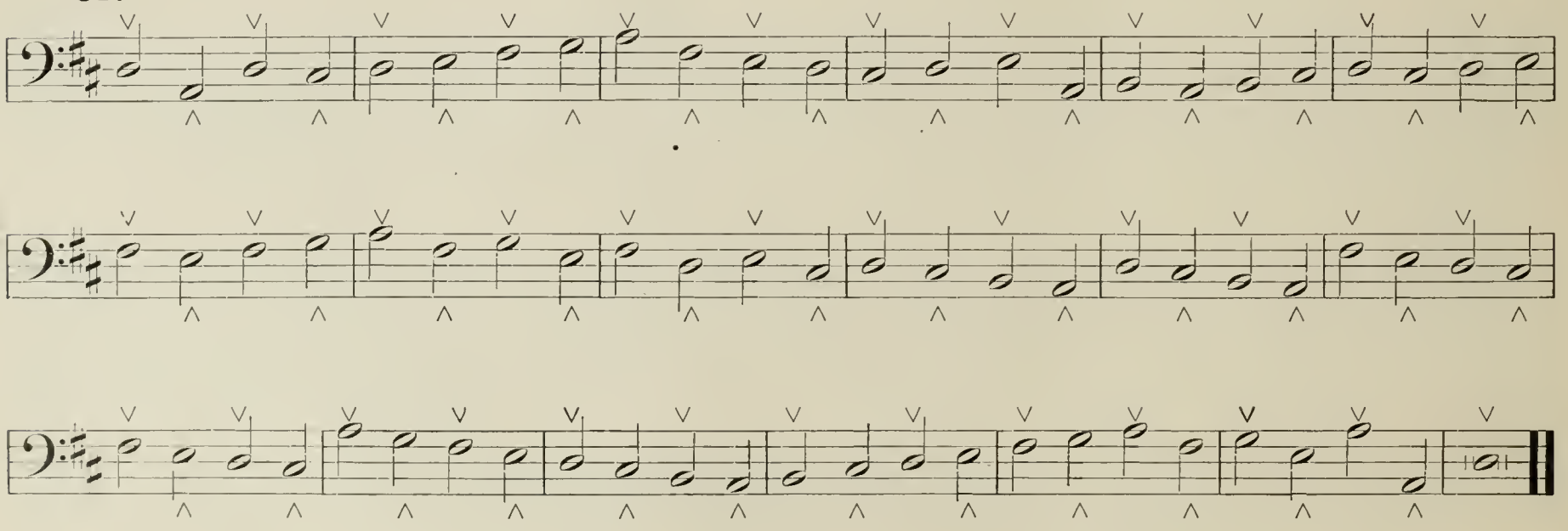

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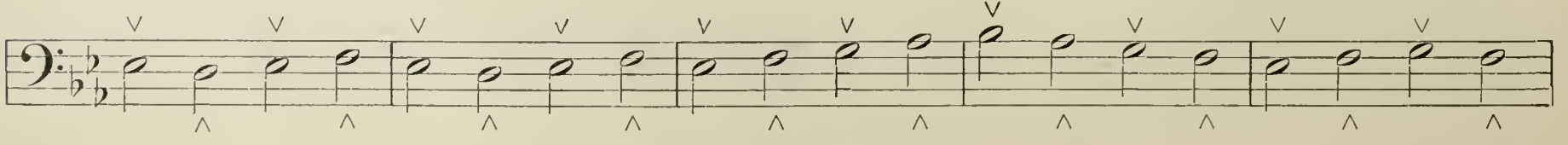


53.

54.

55.

56.

57.

Independence of Hands.

As the hands are *crossed* more frequently in playing the organ than the pianoforte, special attention must be directed to the exercises for teaching independent movement of the hands.

On the organ — that is to say, an organ with two or more manuals — many beautiful effects can be produced by using the hands on two different manuals having tones strongly contrasted in *quality*, though as equally balanced as possible with regard to *quantity* of sound. Every time passages are then made to cross each other, both parts remain pure and distinct.

Great pains should be taken to make the hands strike the keys *precisely* together. The sounds produced should be quite *clear*, but not *staccato;* free from what is very expressively called *smearing*, yet quite *legato*.

It should be observed that the wrist is held a little higher than in pianoforte-playing (as before stated), so as to allow either hand to pass under the other, as the case may be, without any displacement of its position. A jump of one hand to allow the other to pass under it not only looks badly, but often leads to the playing of wrong notes.

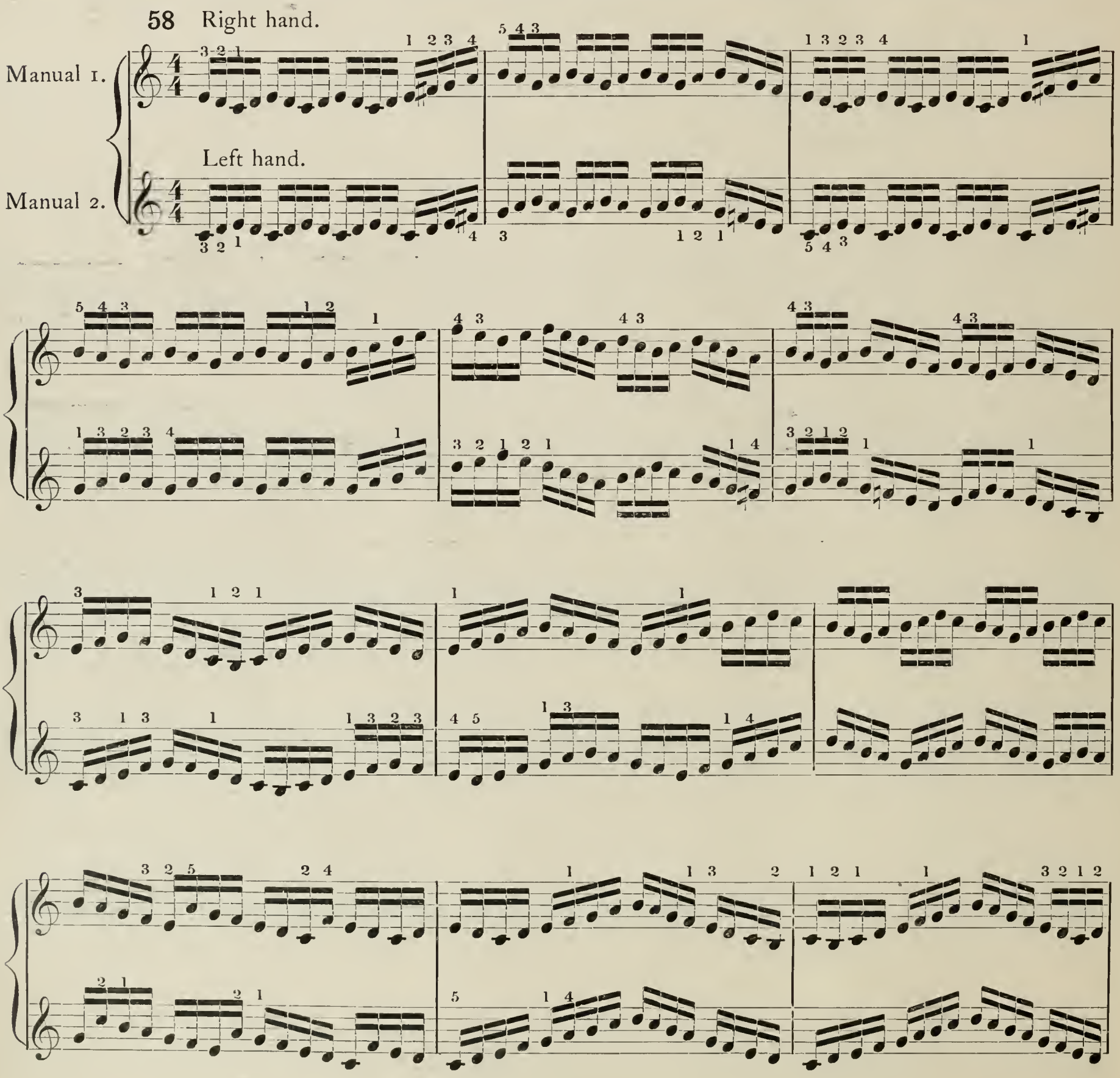
Exercises for the Practice of Independent Movement of the Hands, on Two Manuals.

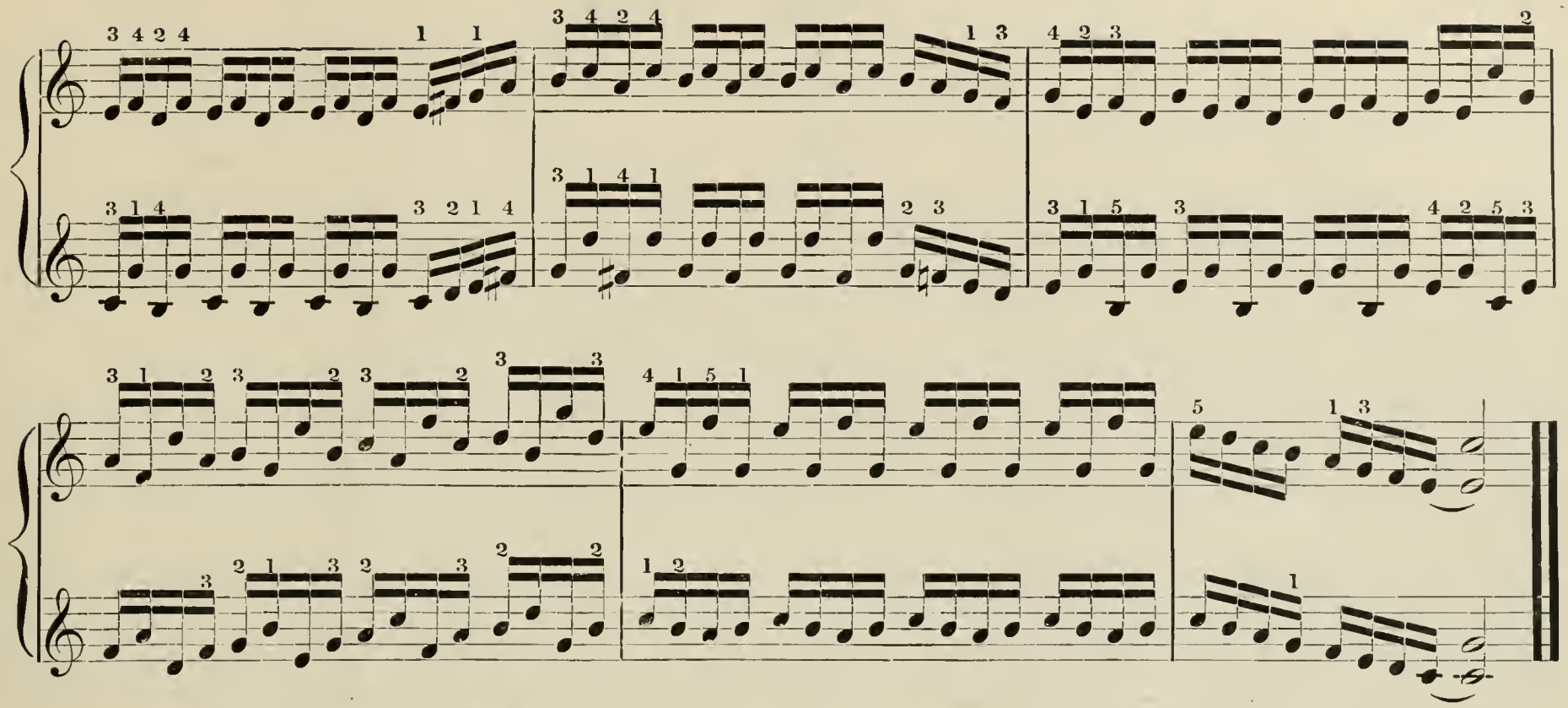
58 Right hand.

Manual 1.

Left hand.

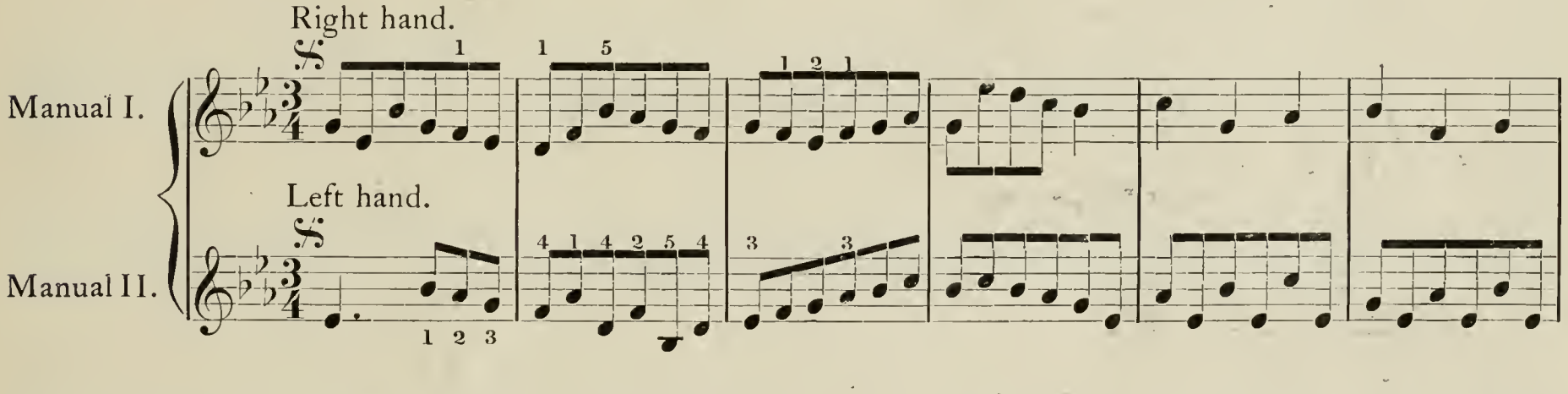
Manual 2.

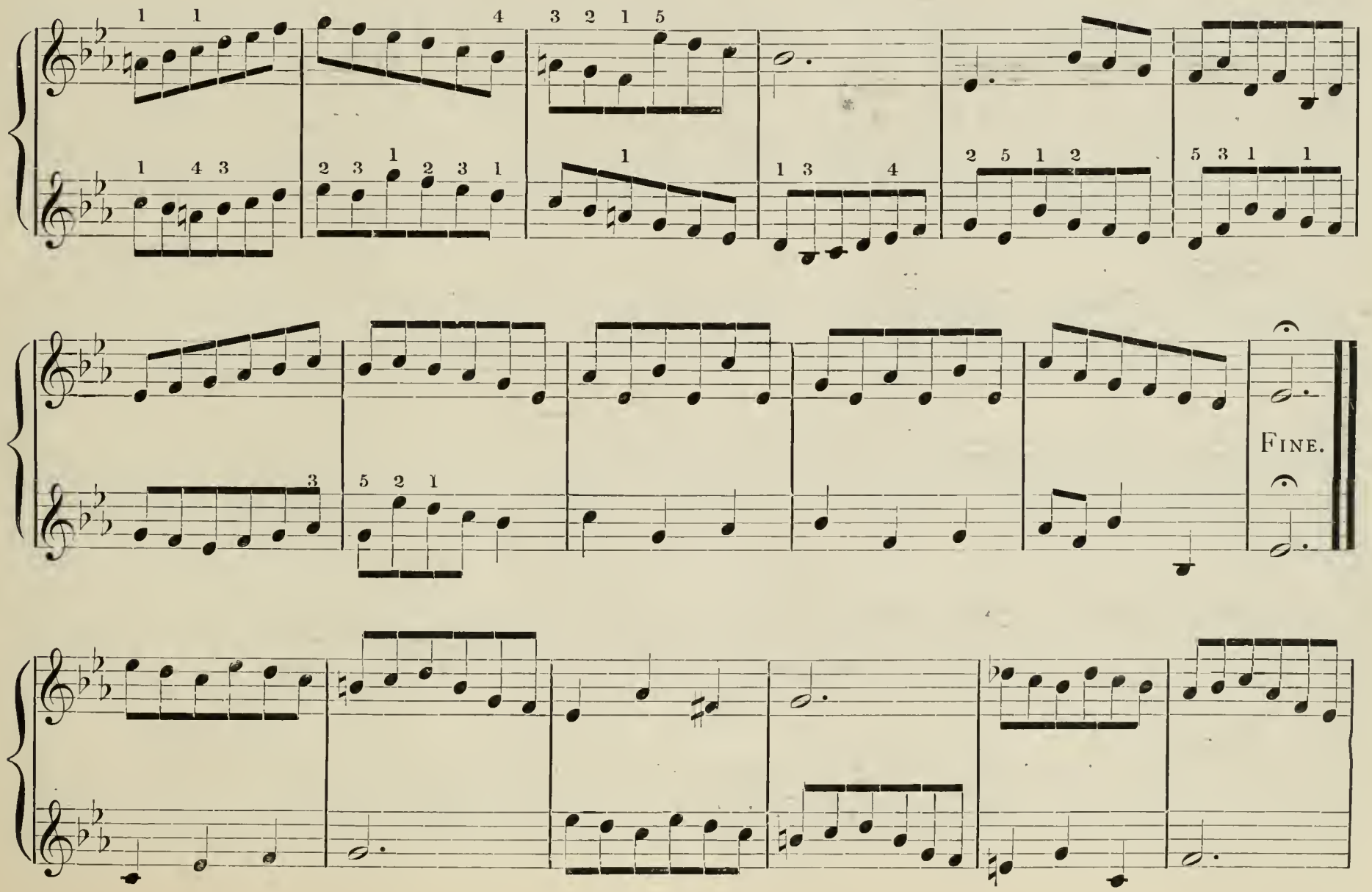


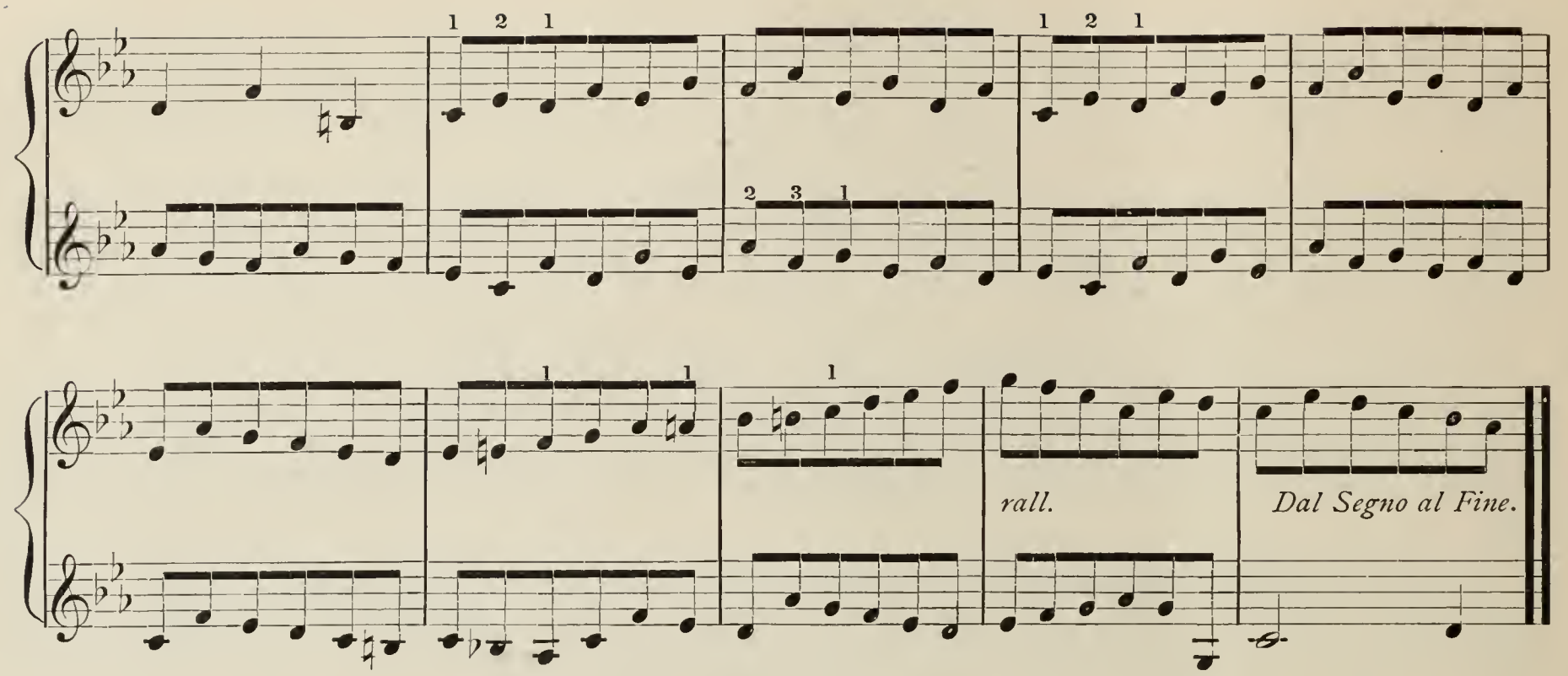


59.

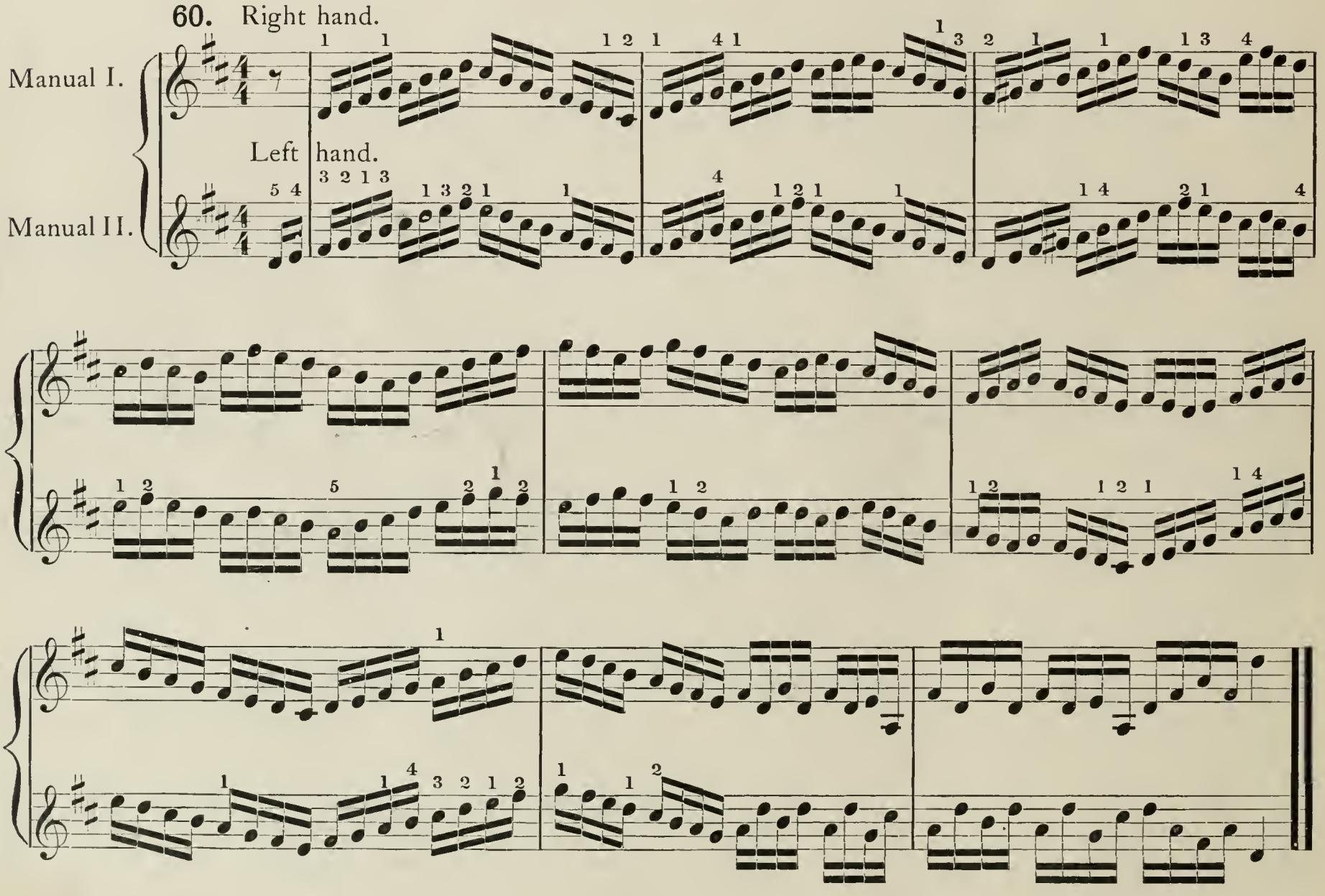
Right hand.







60. Right hand.



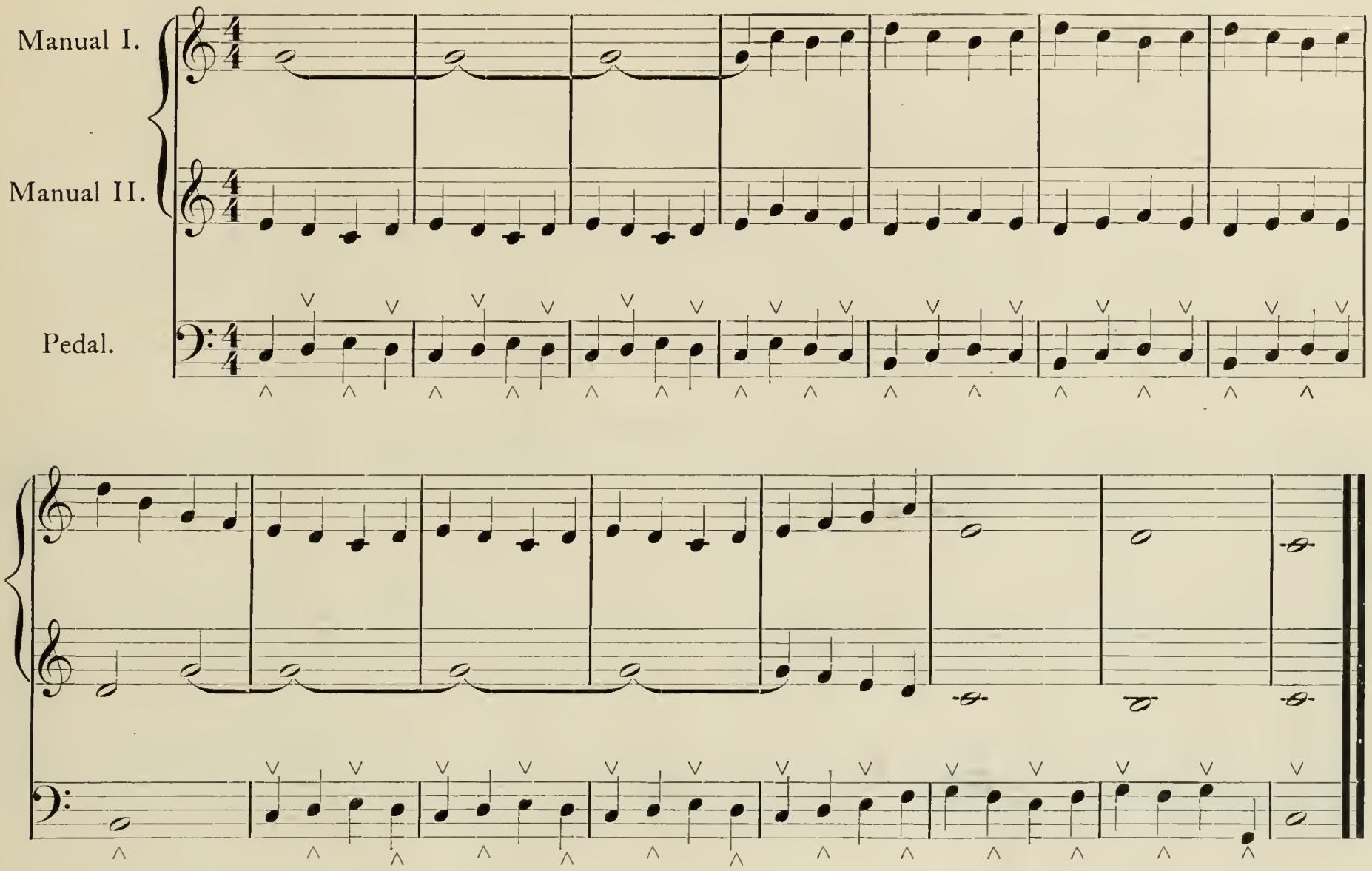
The pupil may now begin to play in three parts, one part being assigned to each hand, another to the feet. Of course, this sort of playing will at first very much tax his attention and perhaps *patience*. But as it brings into prominence the essential characteristics of organ-playing, he will find his labor amply repaid by the ease with which, at a later period, he will unravel fugal knots of no small complication.

Special attention will be necessary to the next set of exercises, designed to give independence of action to both hands and feet.

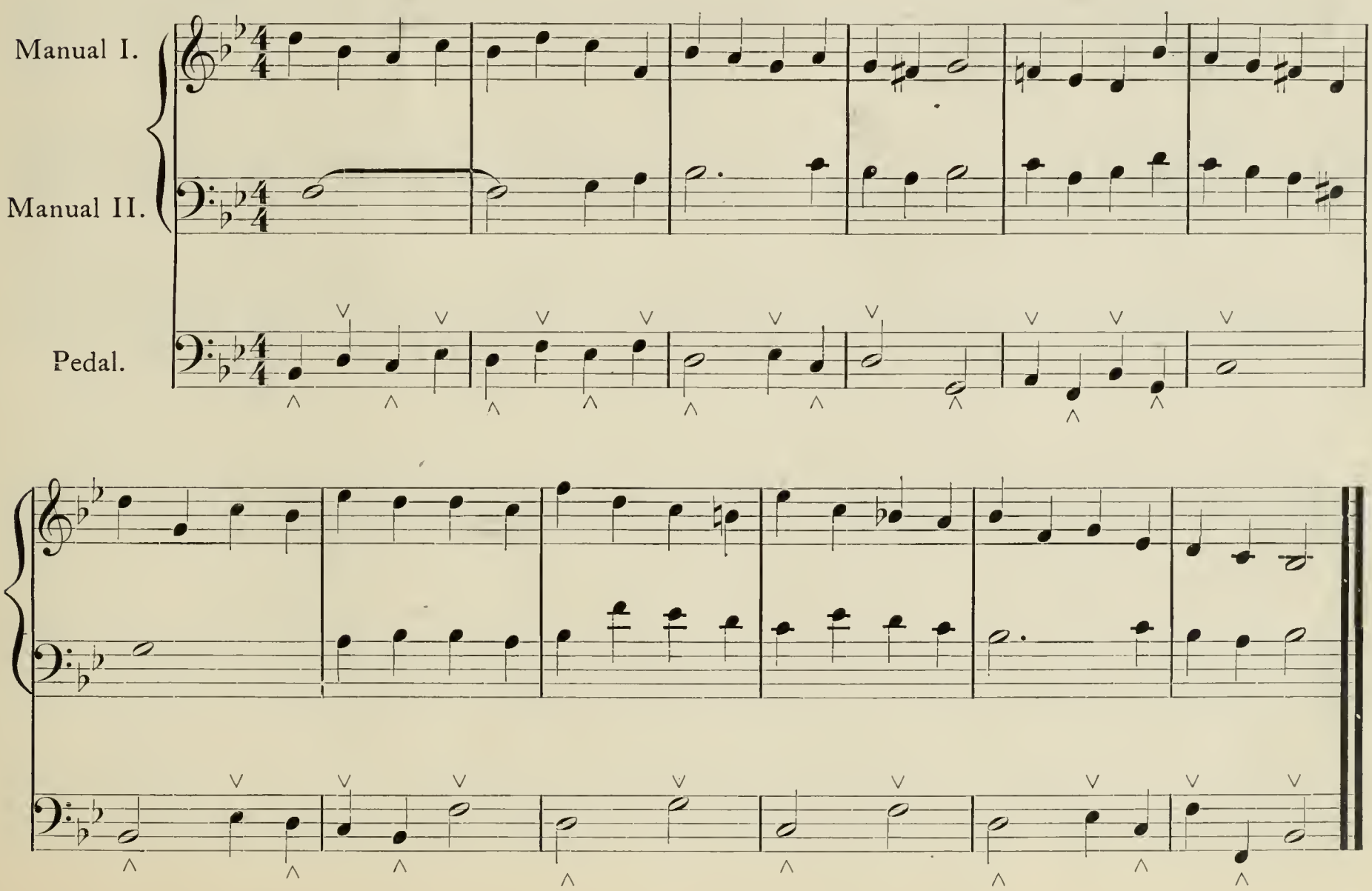
Care must be taken that finger and foot strike the keys and produce the tones exactly *together*. In bad organ-playing the pedal-part often sounds as if it were a humble follower of the manuals, too diffident and nervous to rank with them. It need not be pointed out that such a fault in execution is fatal to all beautiful effects.

Easy Trios for Producing Independence of Hands and Feet.

61.



62.



63.

Manual I.

Manual II.

Pedal.

64.

Manual I.

Manual II.

Pedal.

65.

Manual I.

Manual II.

Pedal.

Toe and Heel.

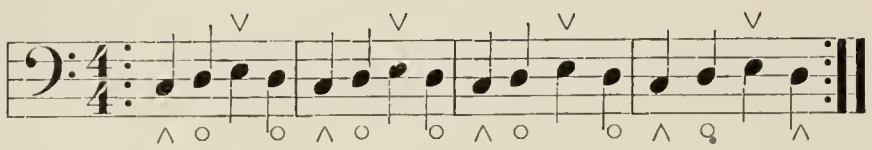
The pupil may now begin to practise pedalling with "toe and heel."

∨∧ Signifies that the toe is to be used.

○ Signifies that the heel is to be used.

Signs for the right foot are *over* the notes; signs for the left foot, *under* the notes.

66.



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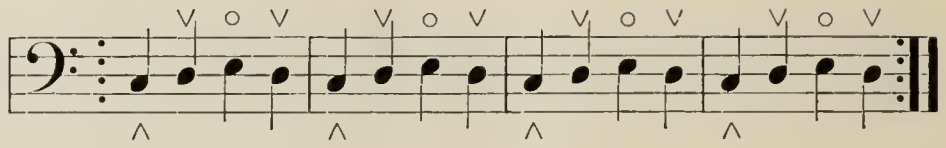
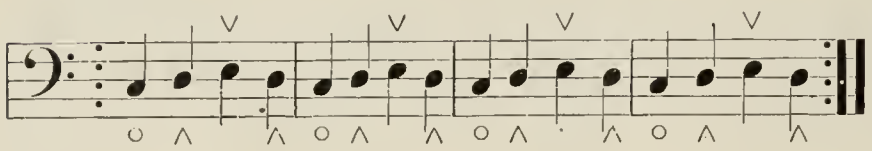


68.



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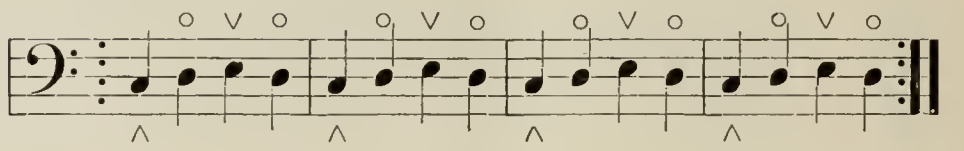
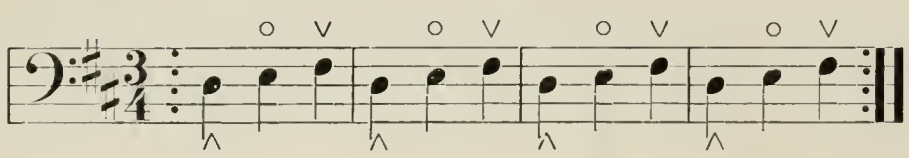


The above examples will at once give the student an idea of the many ways in which the same passage may often be pedalled. Sometimes all of them are equally smooth and good.

The next exercises will introduce the movement of toe and heel to and from a sharp key.

(Take great care that all the tones are exactly equal in length, and smooth, though quite distinct.)

70.



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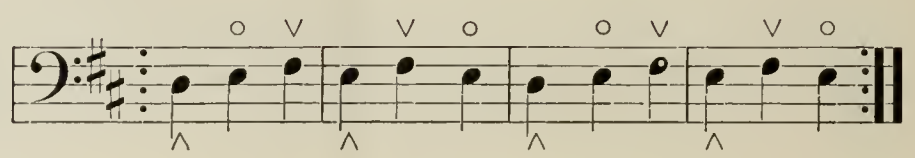

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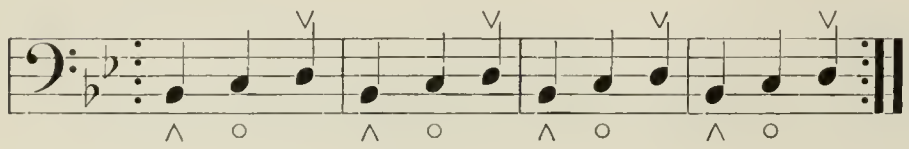

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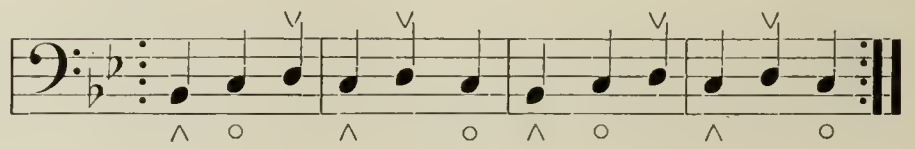

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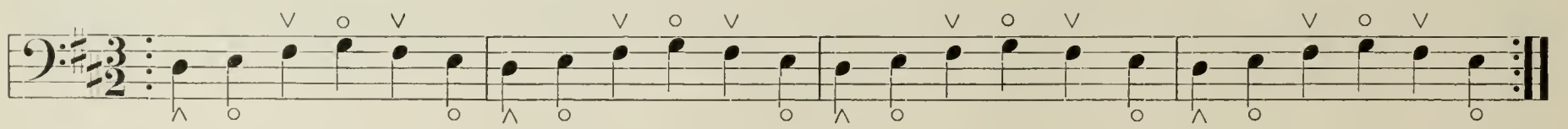

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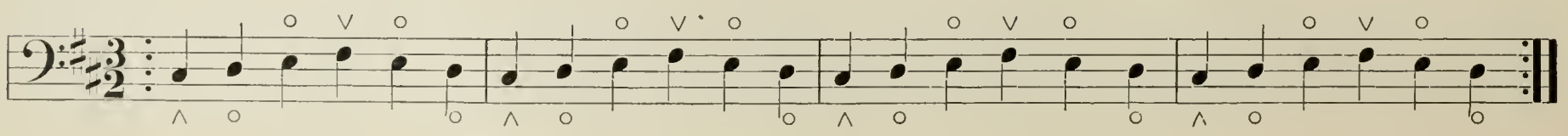

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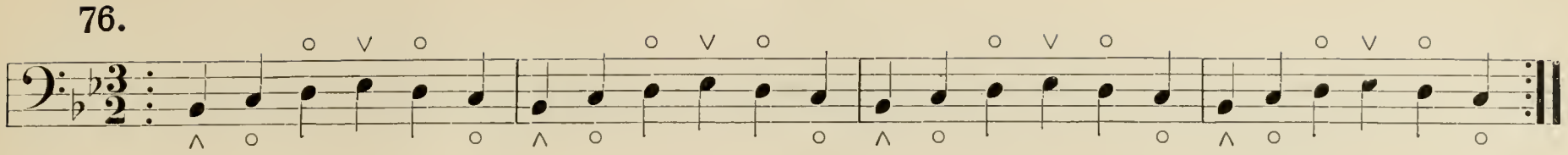

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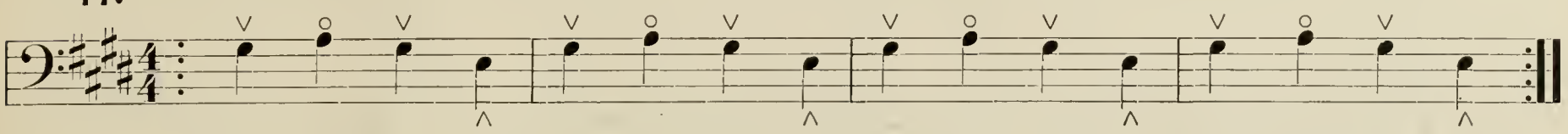
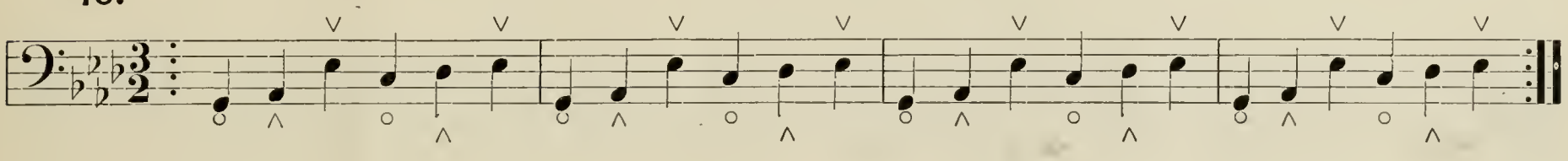


78.



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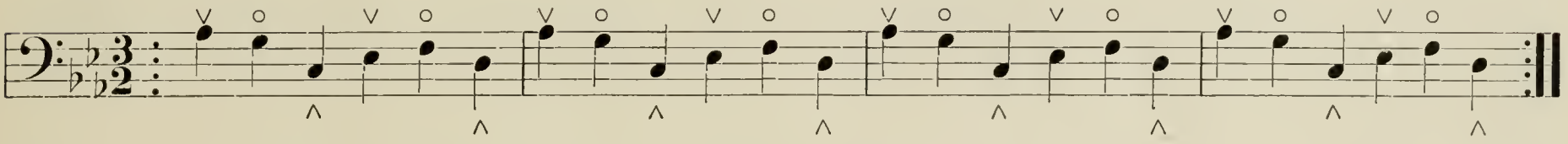

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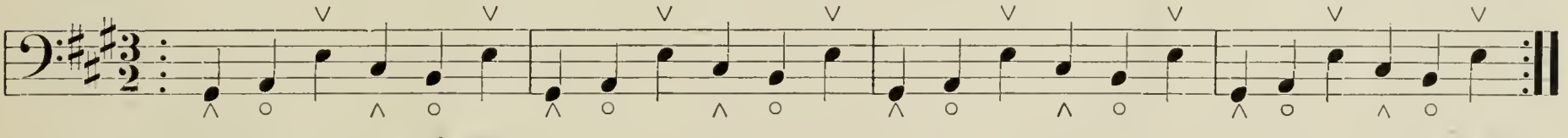

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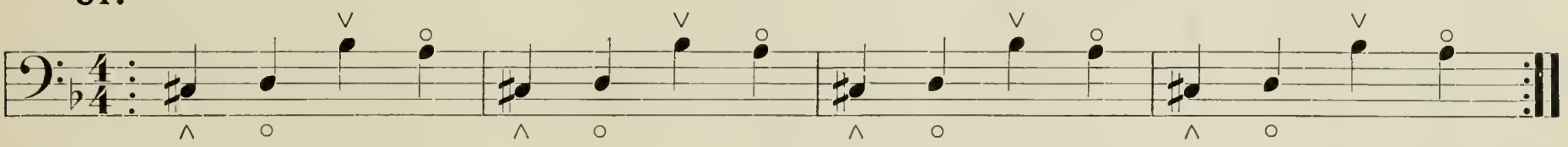
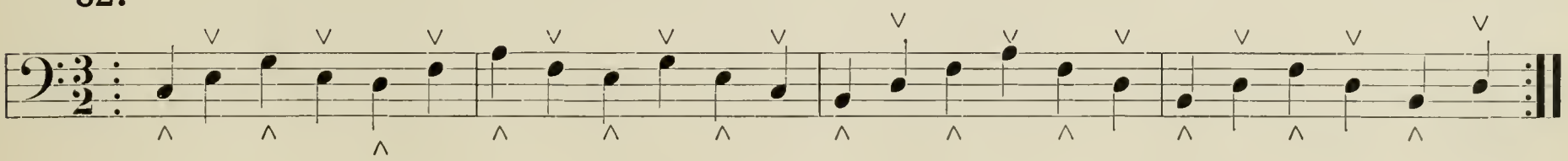
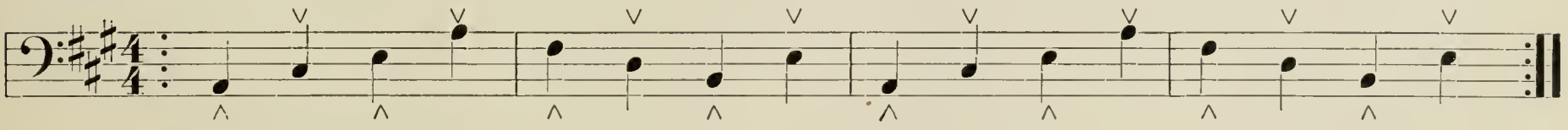


The feet, in crossing each other, often have to take the interval of a third.

82.



83.

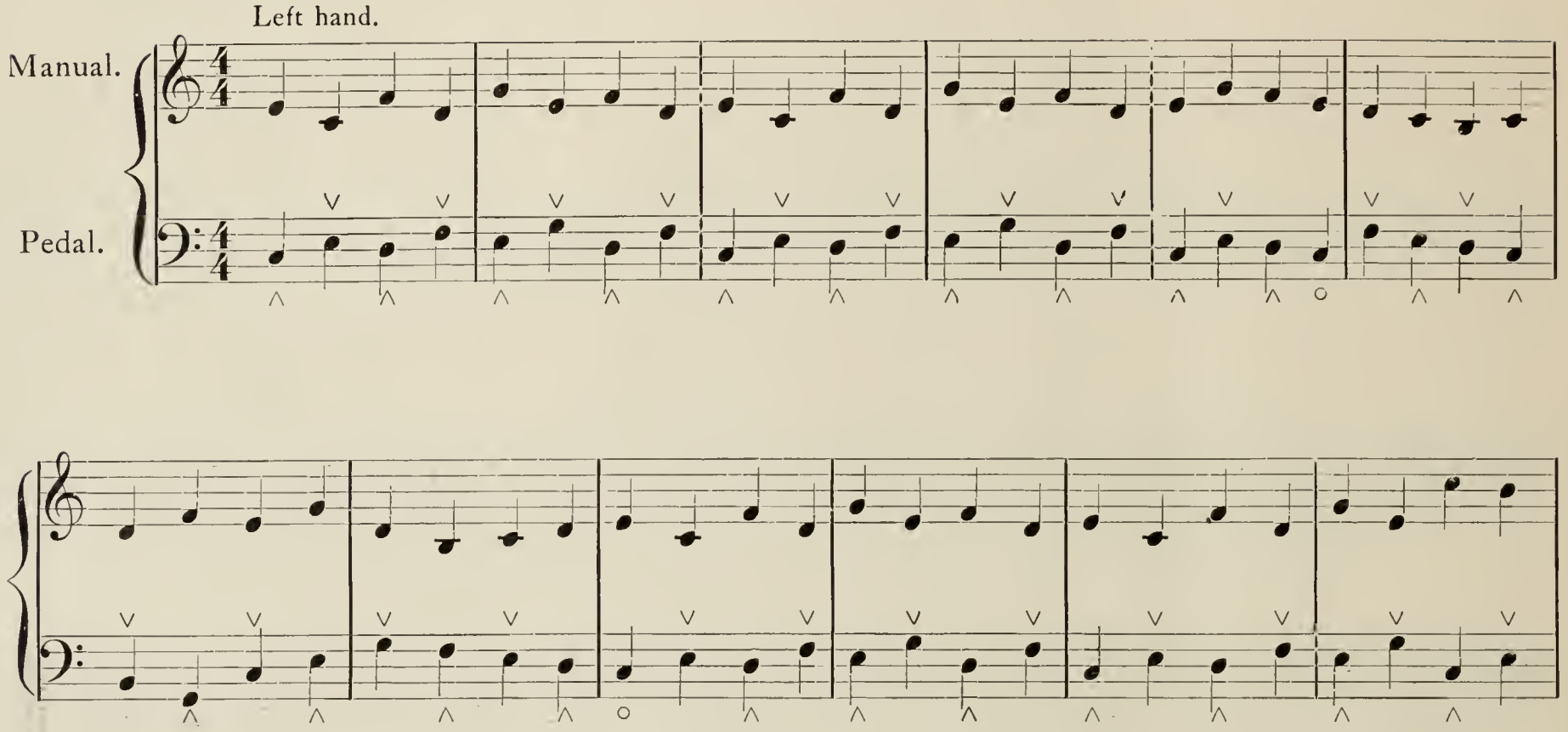


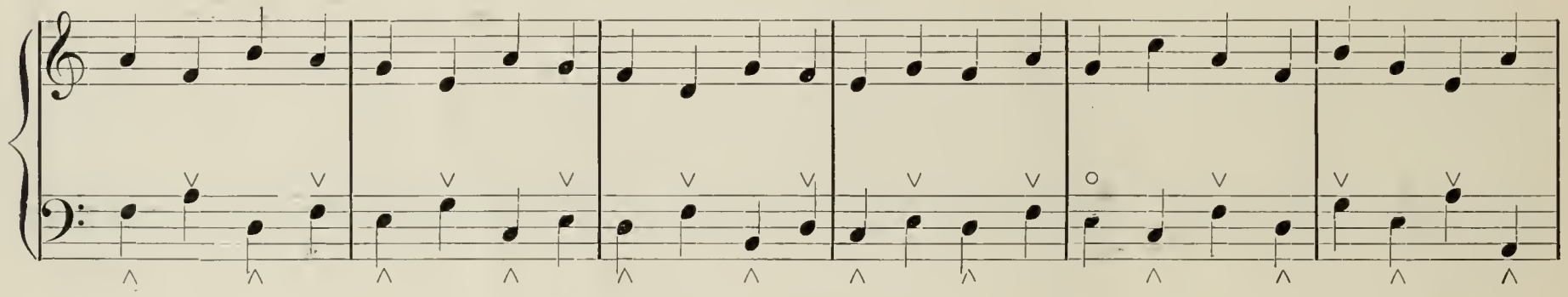
The practice of toe-and-heel pedalling will now be combined with an independent part for the hands.

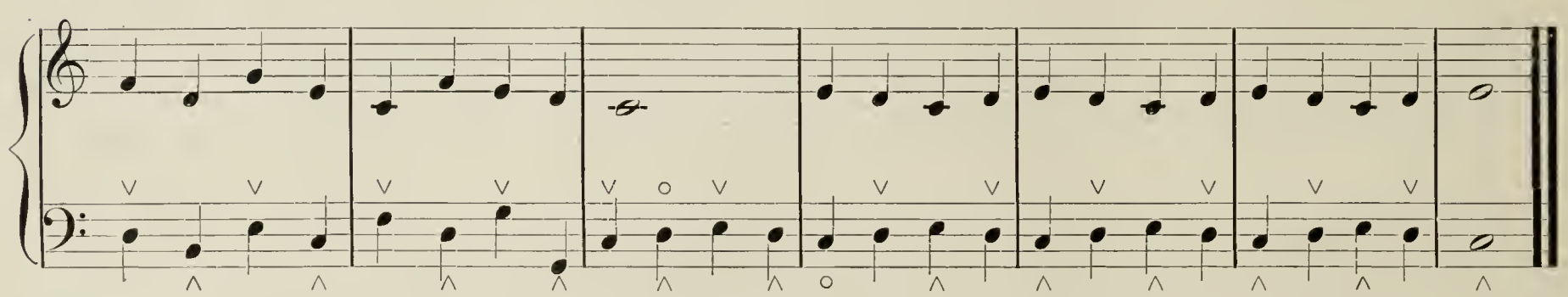
Easy Exercises for Giving Independence of Movement to Hands and Feet.

84.

Left hand.

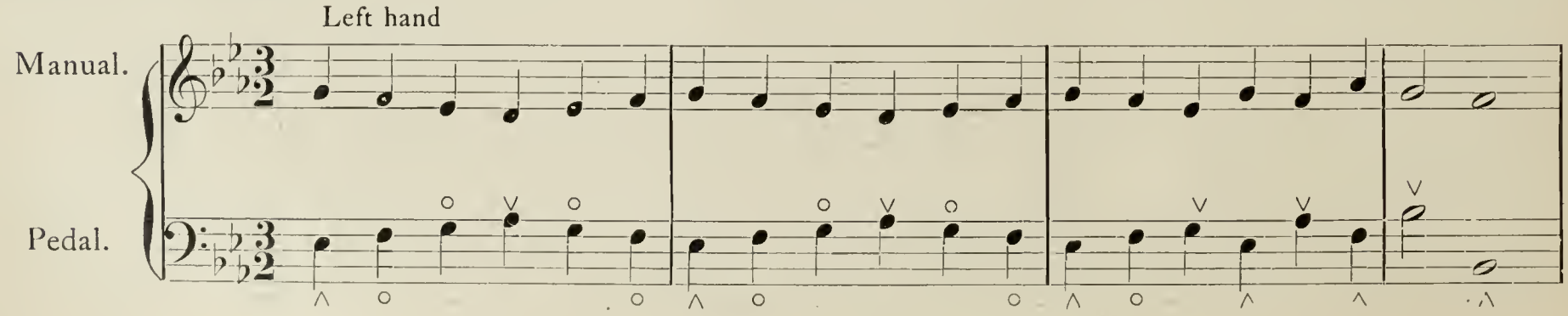






85.

Left hand



86. Right hand (1st time).

Manual.

Pedal.

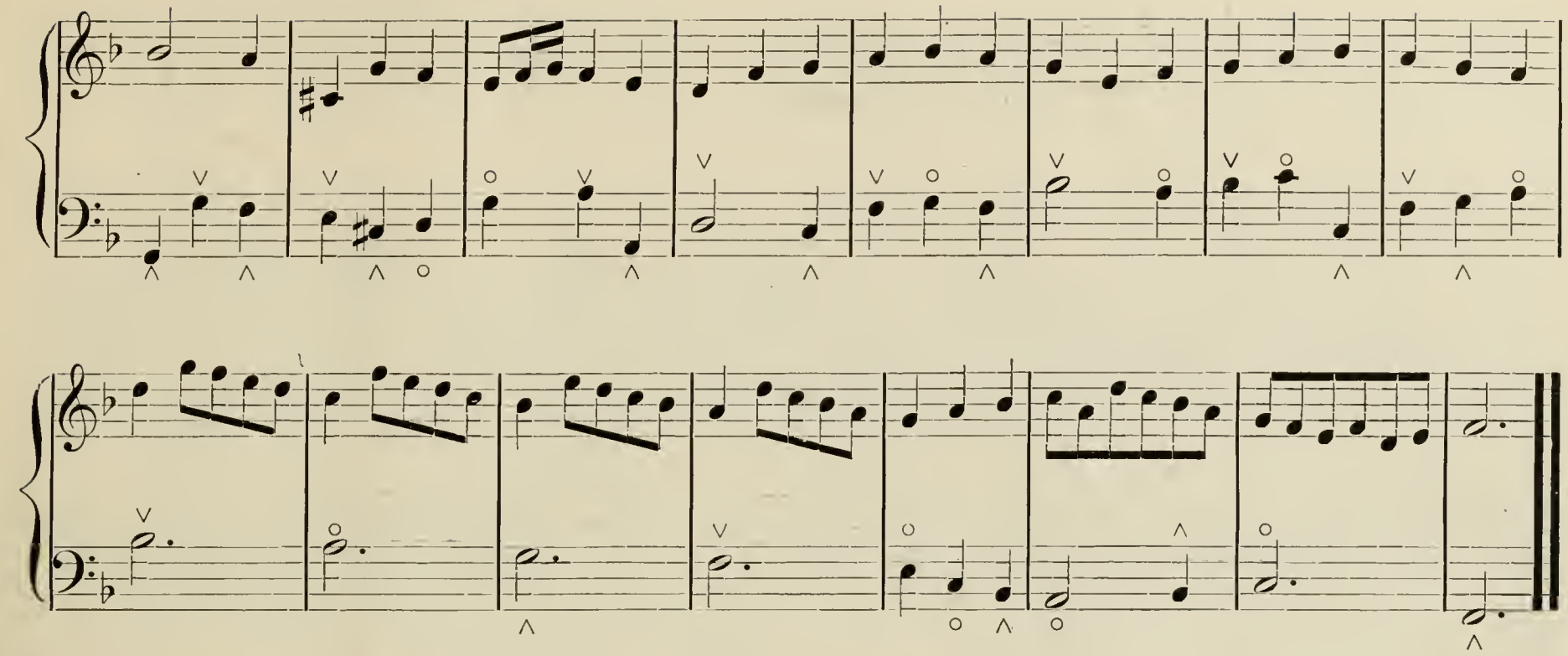
Moderato.

Repeat with Left hand and Pedals.

87. Left hand.

Manual.

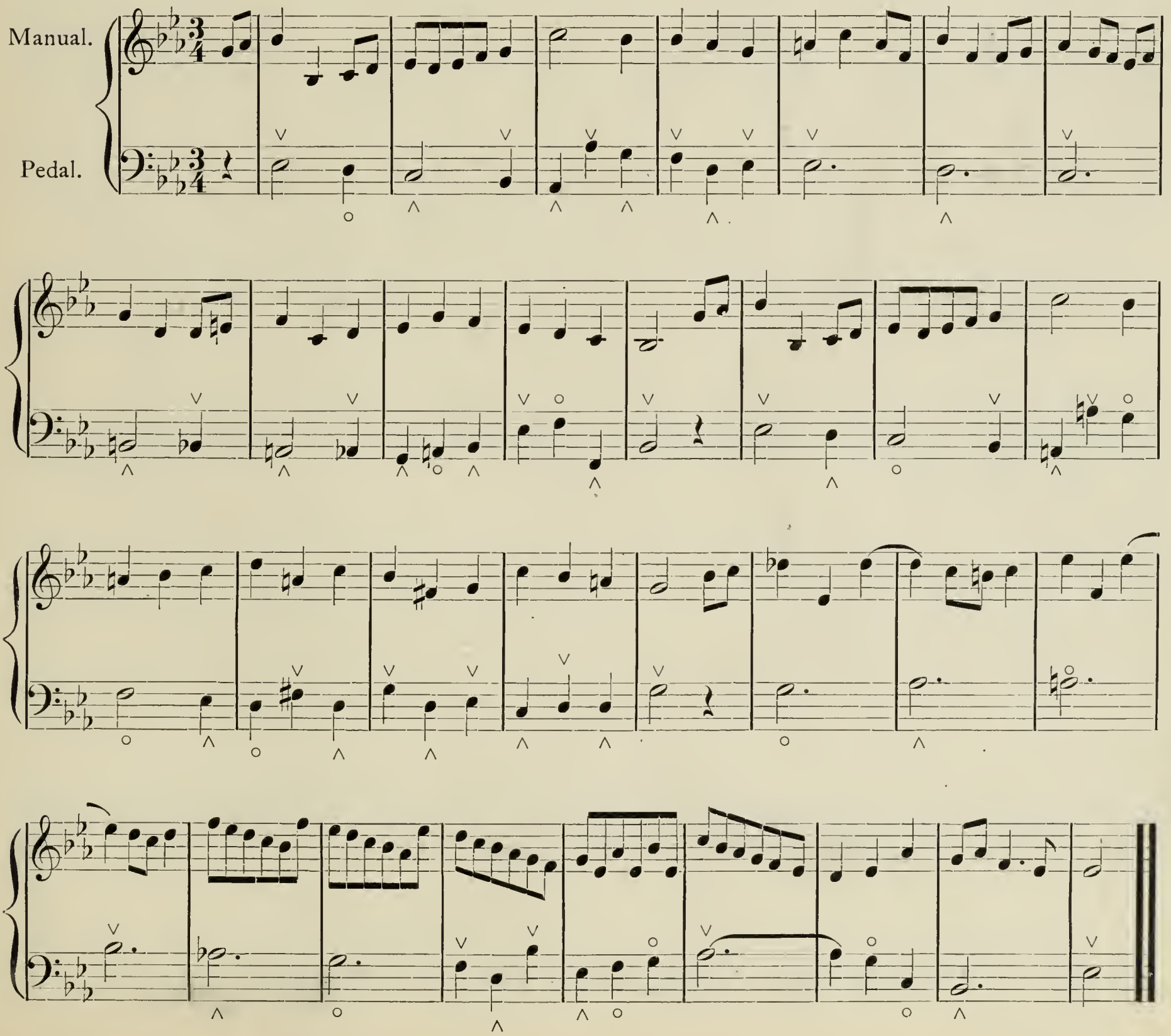
Pedal.



88. Left hand.

Manual.

Pedal.

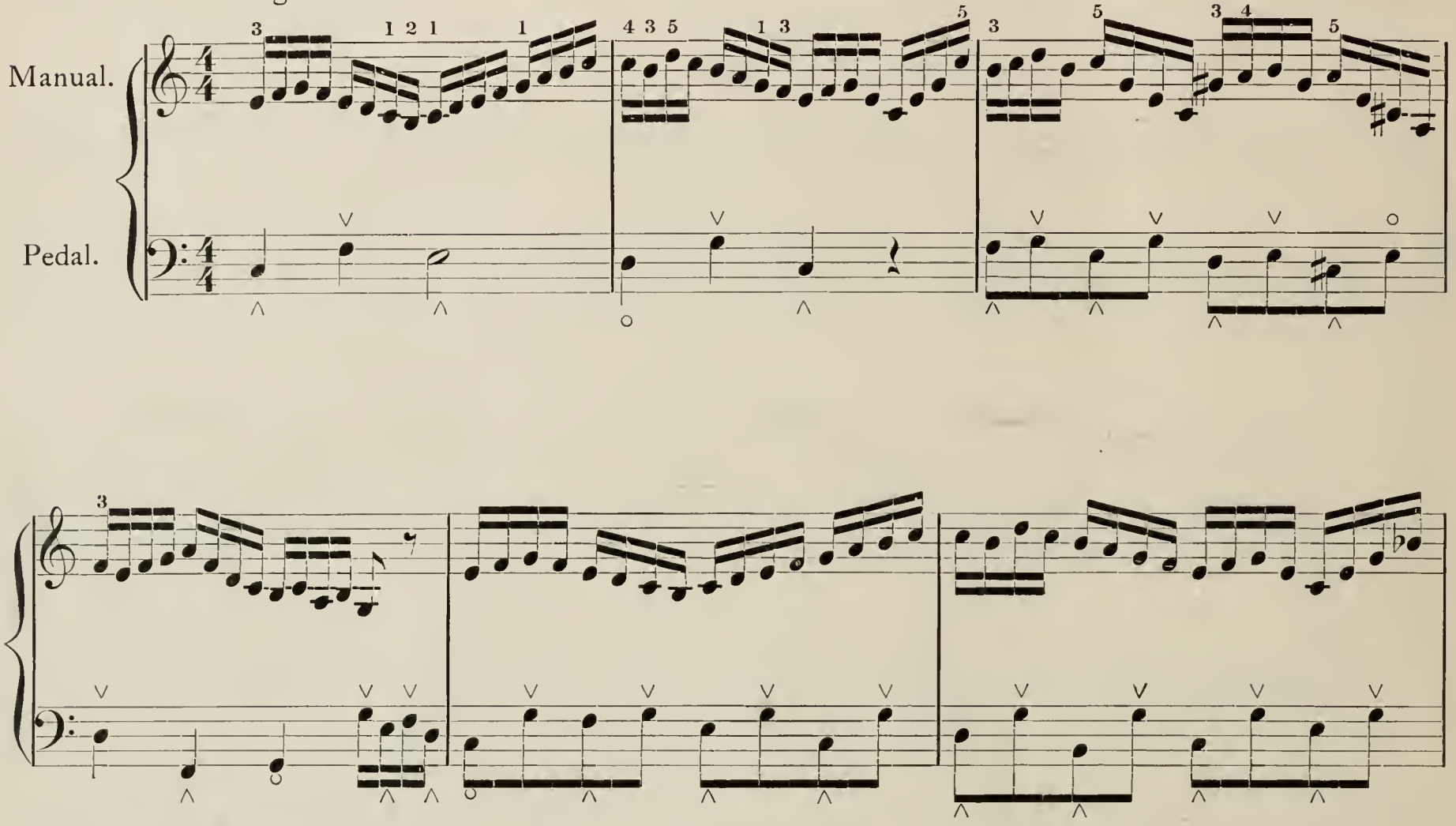


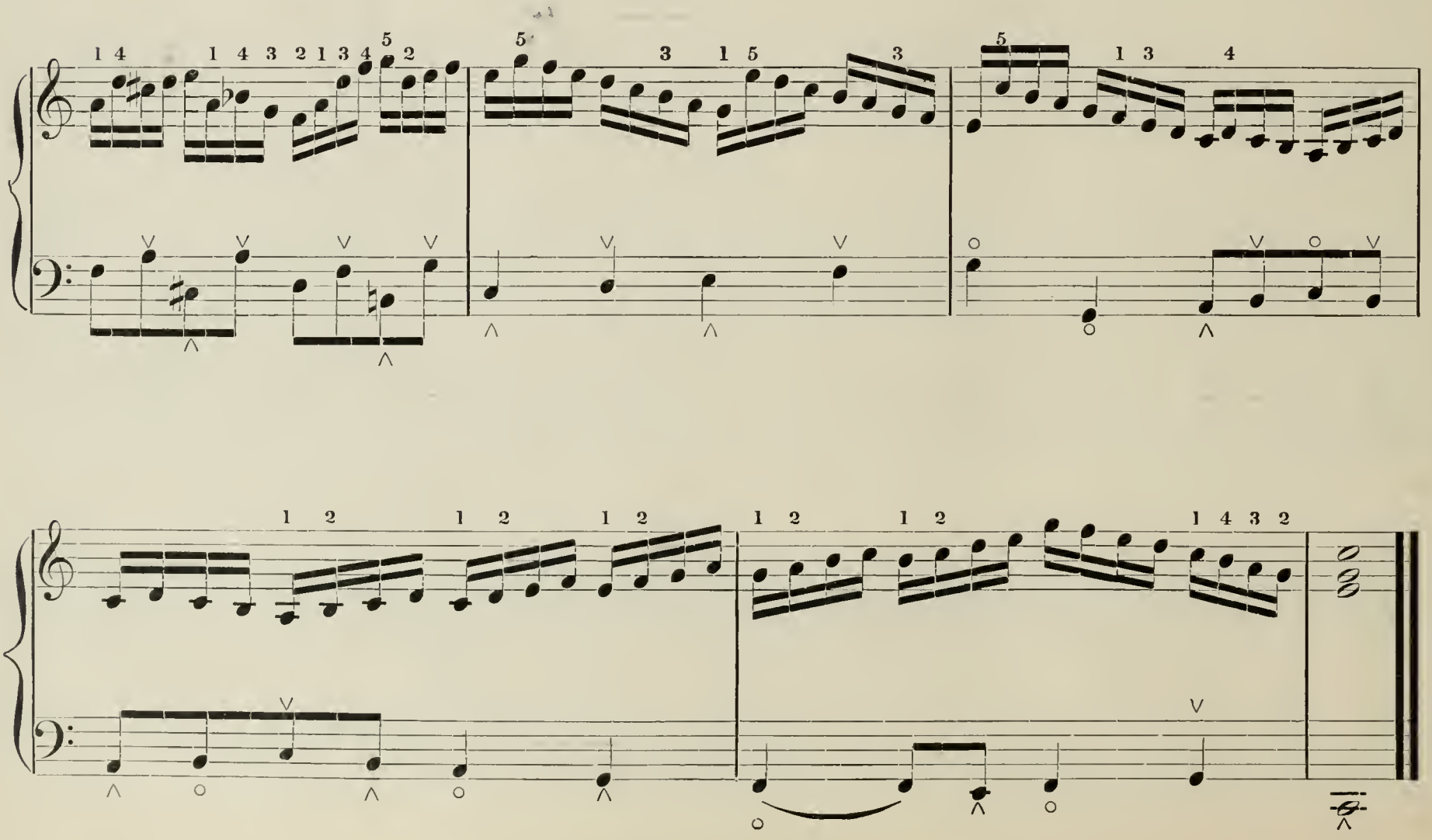
Exercises for Combination of Manual Scale-Passages and Independent Movement of the Feet.

(Care must be taken that each of the four sixteenth-notes is of the same length. It is a common fault to pause on the last of each group)

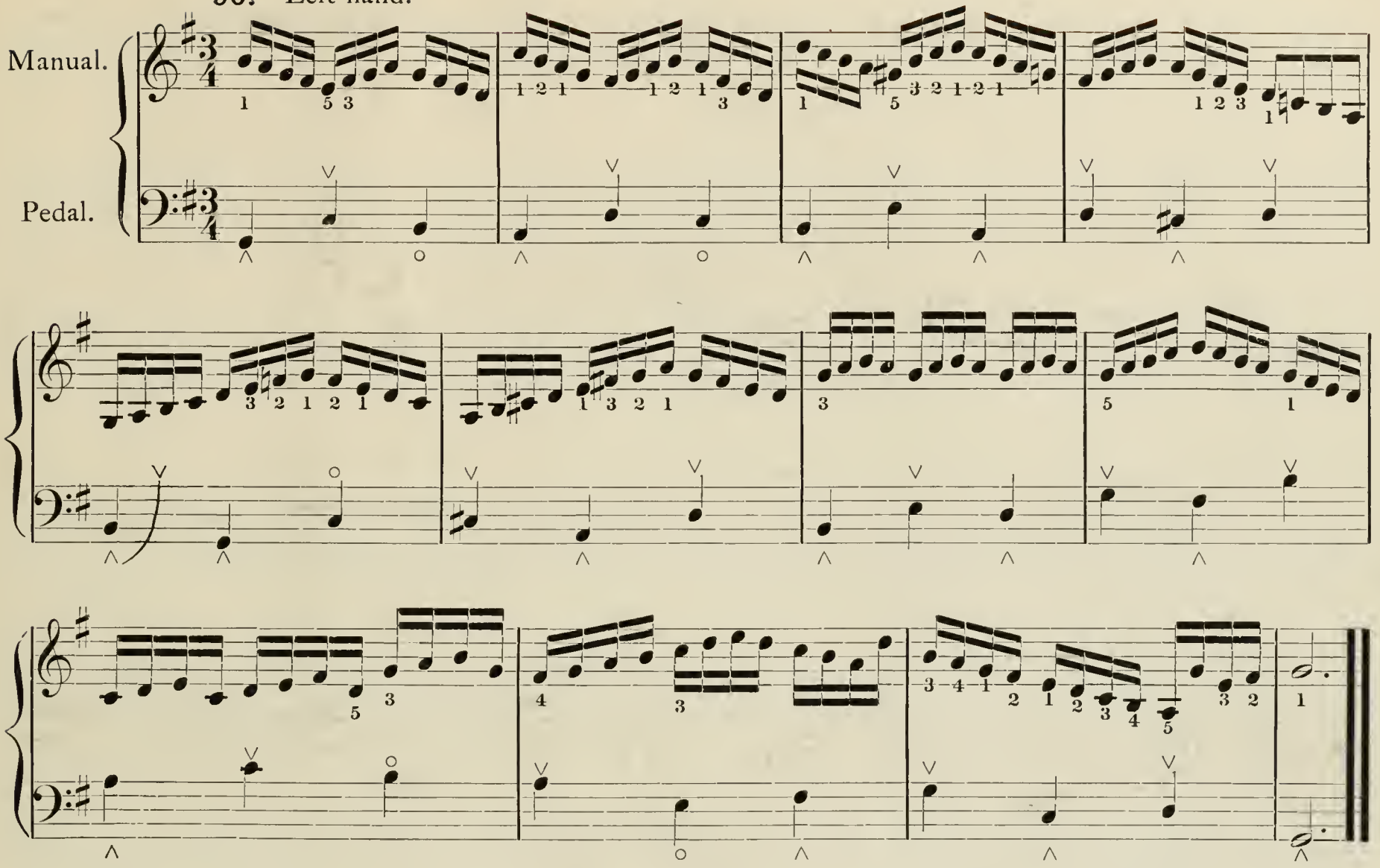
89.

Right hand.



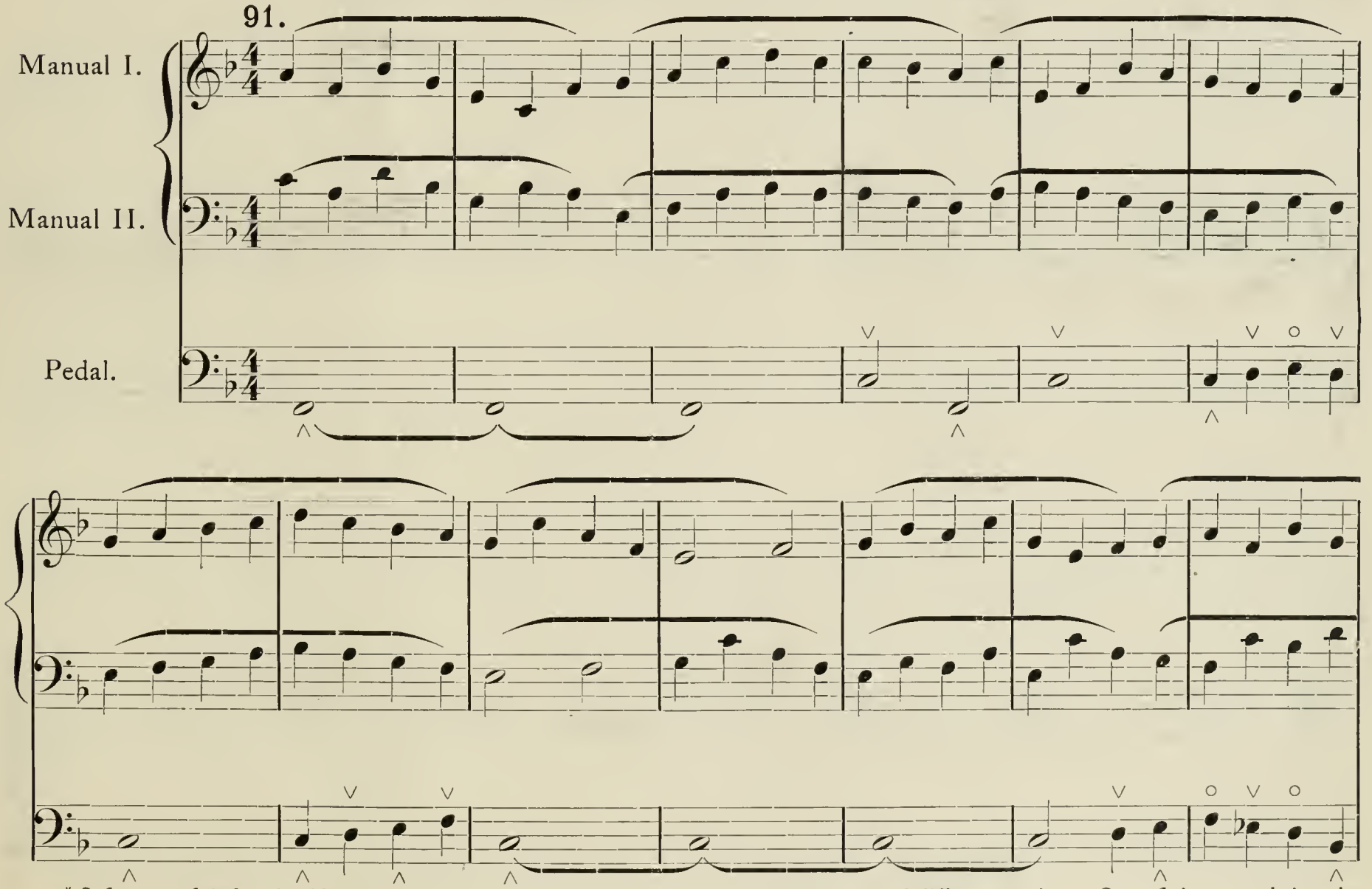


90. Left hand.



Easy Trios Embodying the Previous Work Done.*

91.



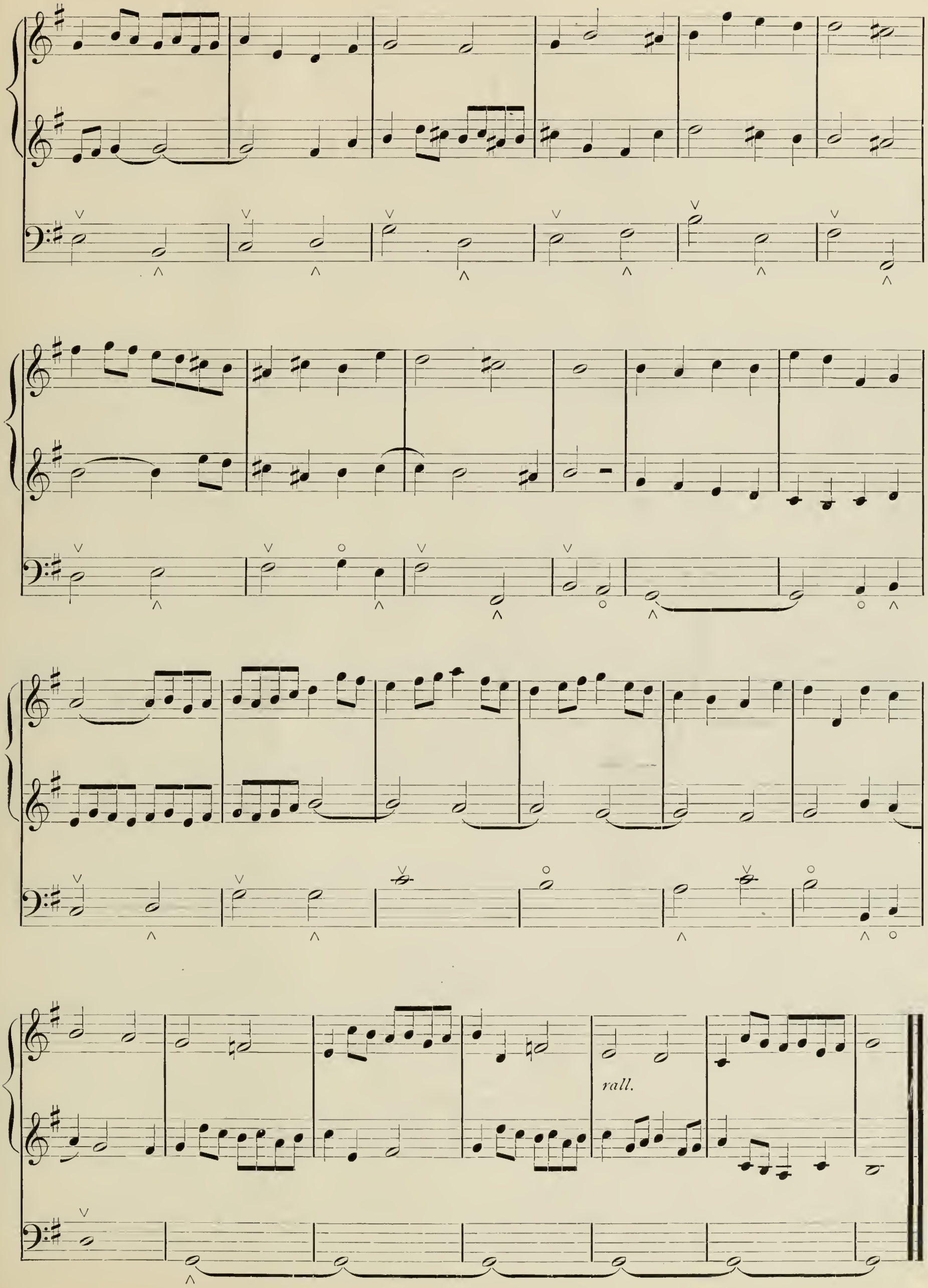
* Soft stops of 8 feet should be used on the two manuals, of nearly equal strength, but of different *quality*. One of the manuals is to be coupled to a soft pedal-stop of 16 feet.

92.

Manual I.

Manual II.

Pedal.


rall.

93. *Andante.*

FINE.

Manual I.

Manual II.

Pedal.

tr

tr

Da Capo al Fine.

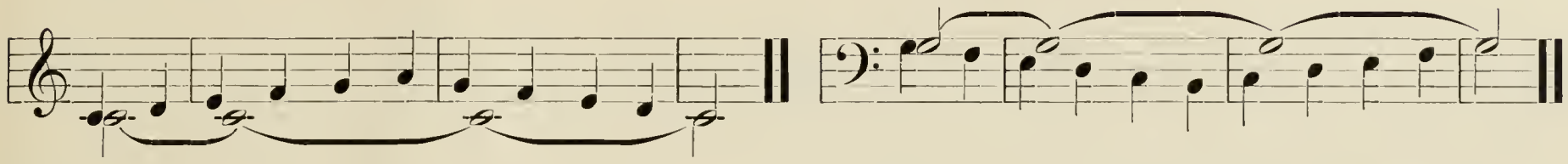
These easy Trios may, with advantage to the student, be followed by a careful study of Albrechtsberger's Twelve Trios, Schneider's Forty-eight Trios, Bach's Six Sonatas (Trios), Rheinberger's Ten Trios, Op. 49, and Lemmens' Trios.

The Legato Style.

We now enter upon a branch of study essentially characteristic of the organ, namely, the *legato* touch, obtained by changing fingers on a given key without repeating the tone.

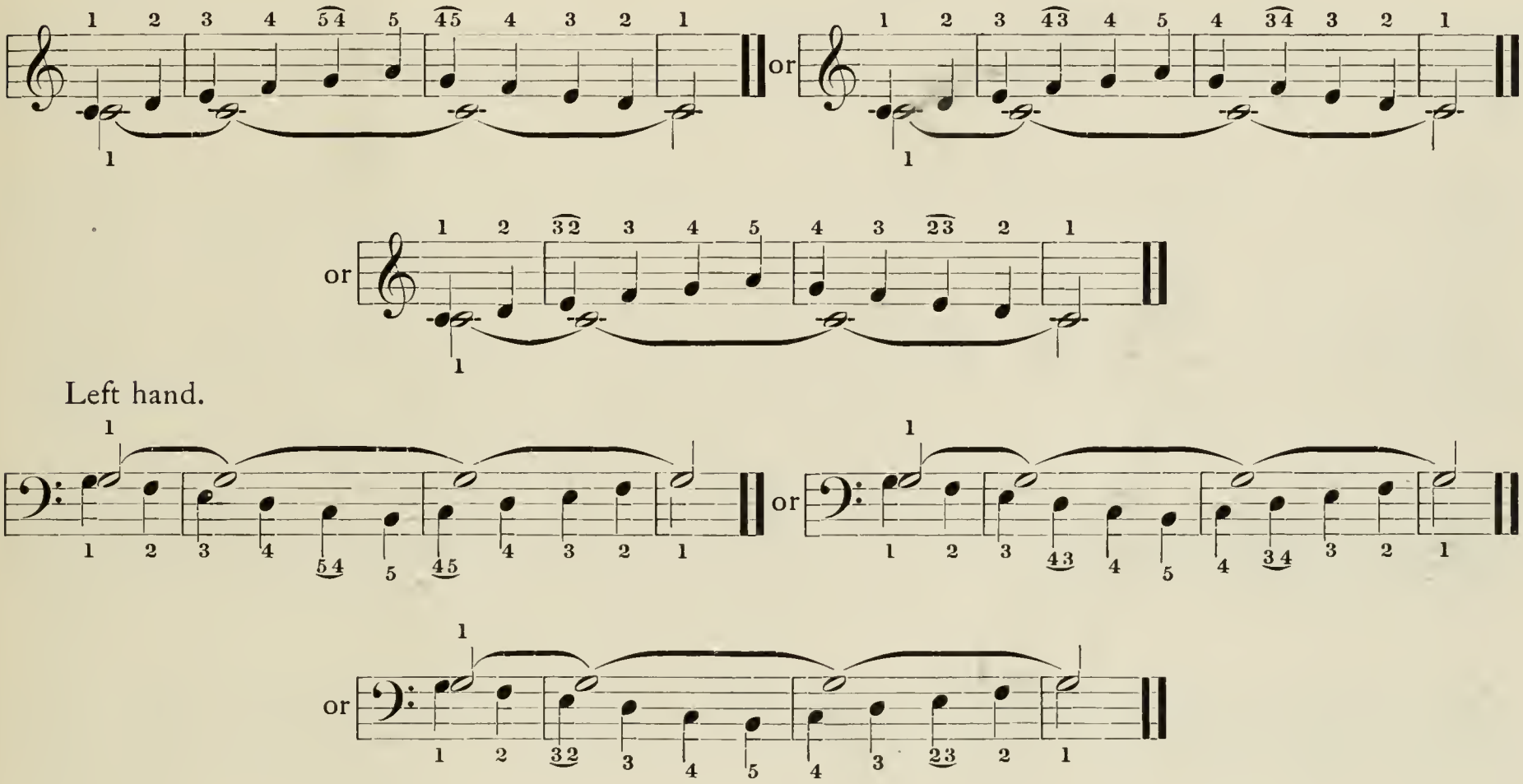
The principle can be thus simply explained. In the following passages

Right hand. Left hand.



it will be found that a *staccato* effect is produced if one finger, say the fourth, plays two consecutive notes; but a very smooth effect is produced if any two fingers *shift* on one note, thus:

Right hand.

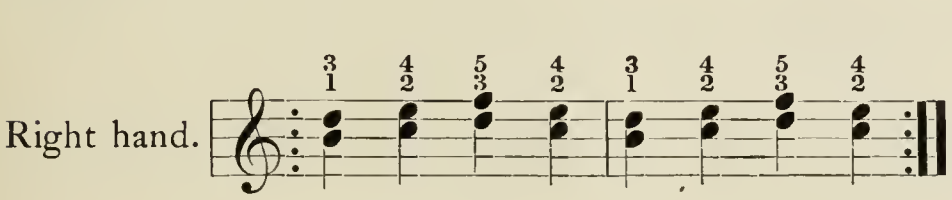


Left hand.

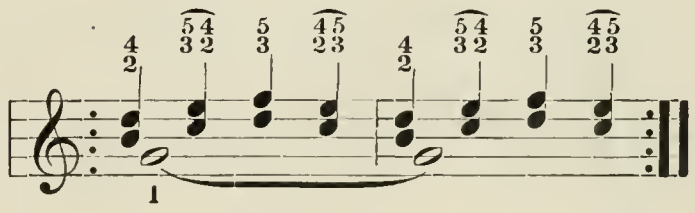
For further illustration of the principle, play these in the keys of D and E♭.

The "shifting" *legato* touch is used only when necessary. Thus, in the first of the two following examples, the thirds would be fingered as on a pianoforte; but in the second example the shifting must be used.

Right hand.

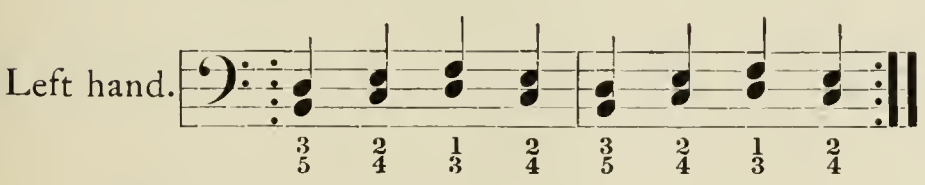


Right hand.

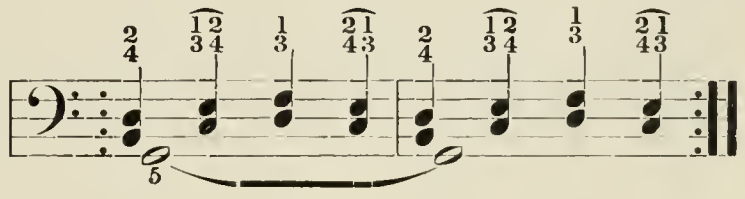


Similarly in the left hand:

Left hand.



Left hand.

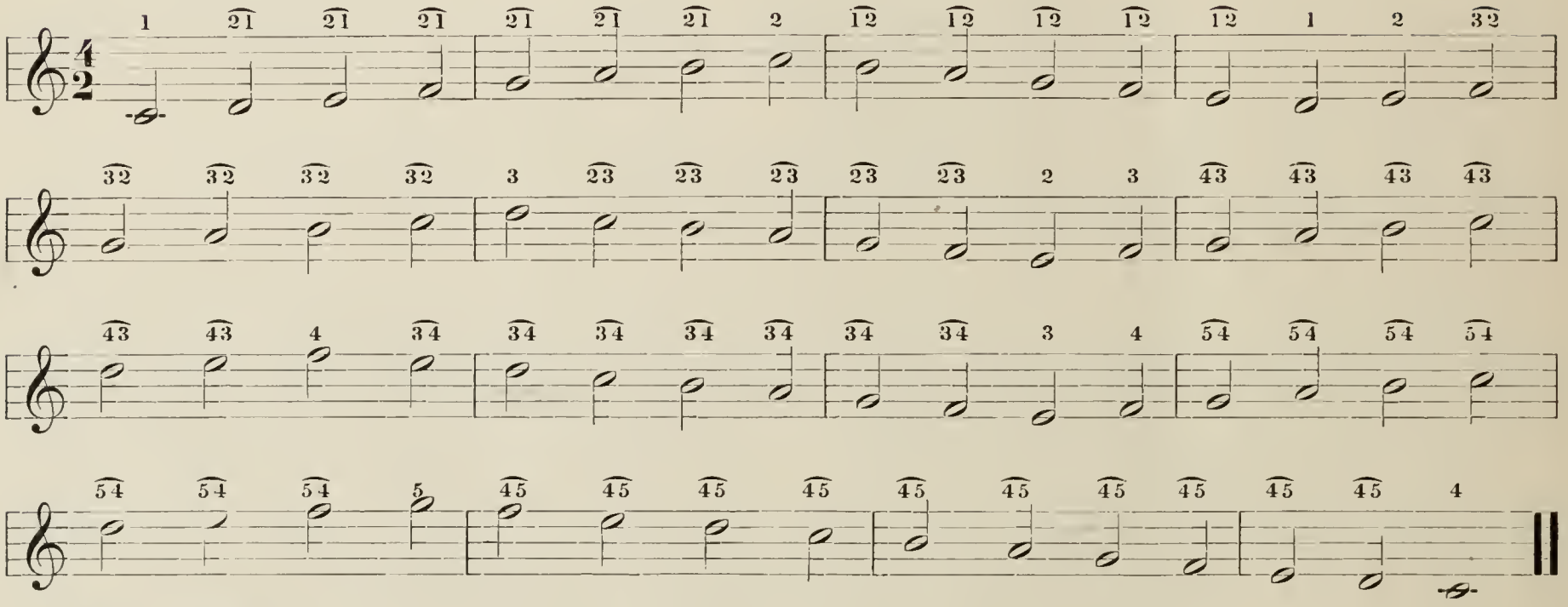


Although the "shifting" *legato* is never actually required when playing scales in single notes, the student is recommended to practise the following exercises very carefully, for the purpose of learning to shift by instinct.

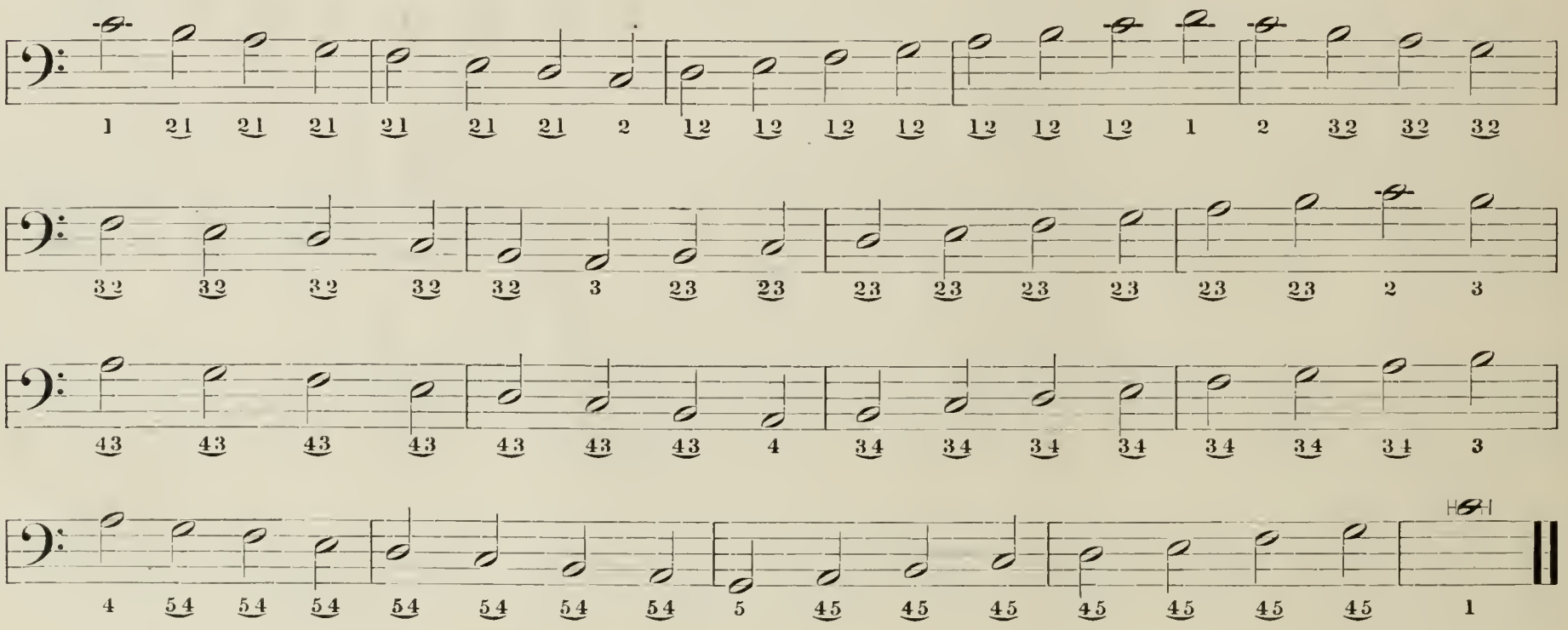
Three things have to be remembered whilst practising the following exercises:

1. The notes must not be repeated when the fingers are changing.
2. The proper position of the hand is on no account to be disturbed.
3. Though played *legato*, the notes must not be run into one another, or *blurred*.

94. Right hand.

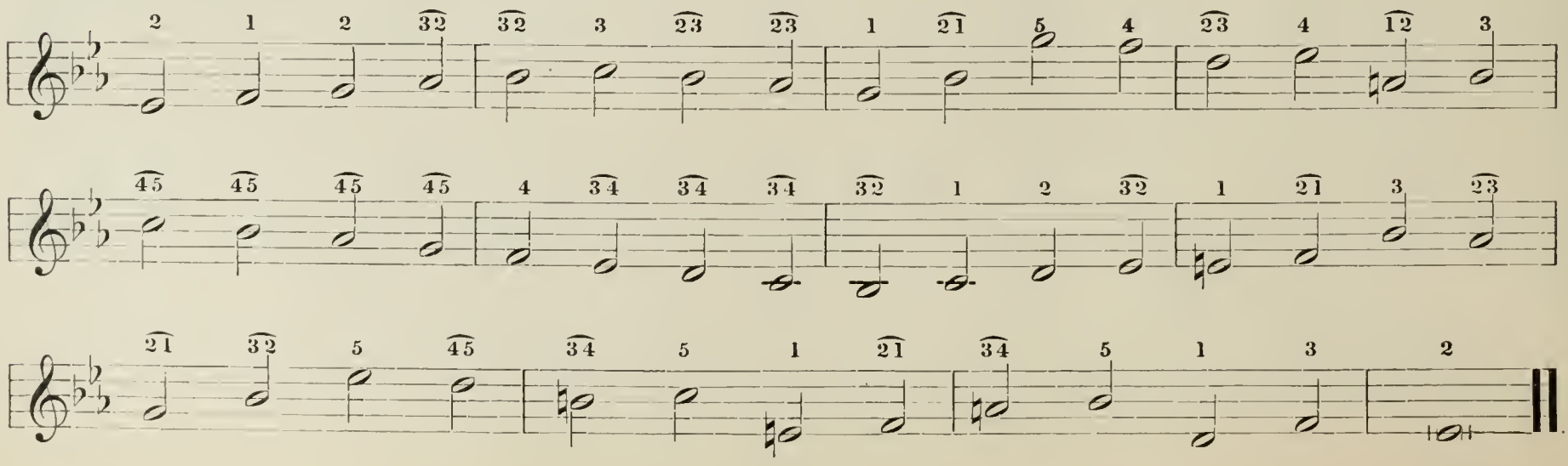


95. Left hand.

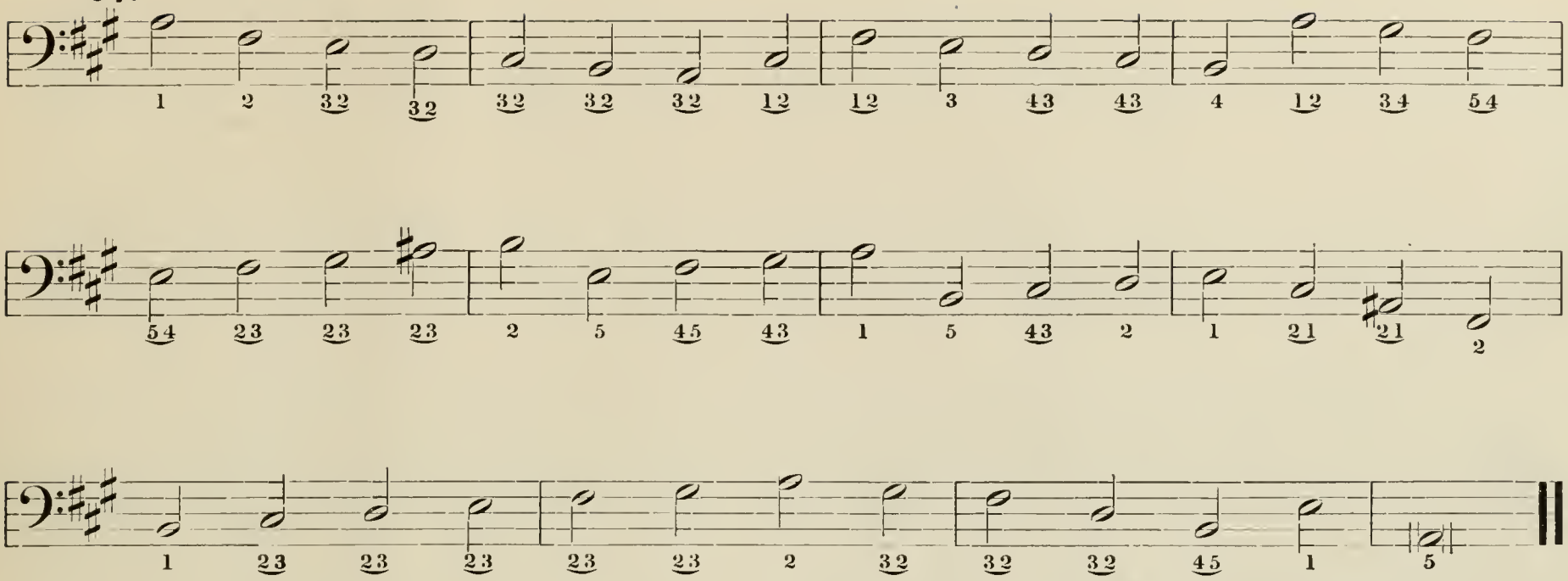


The change of fingers on the black keys must also be practised attentively.

96. Right hand.



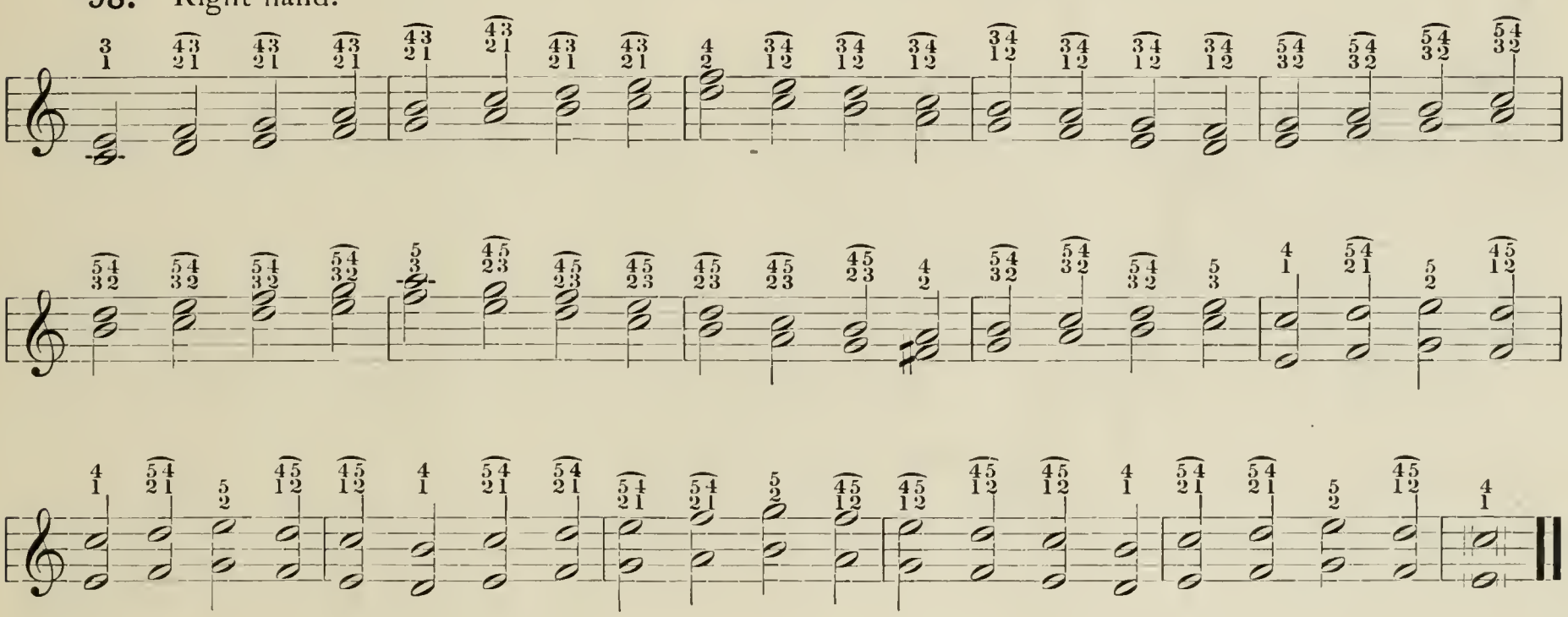
97. Left hand.



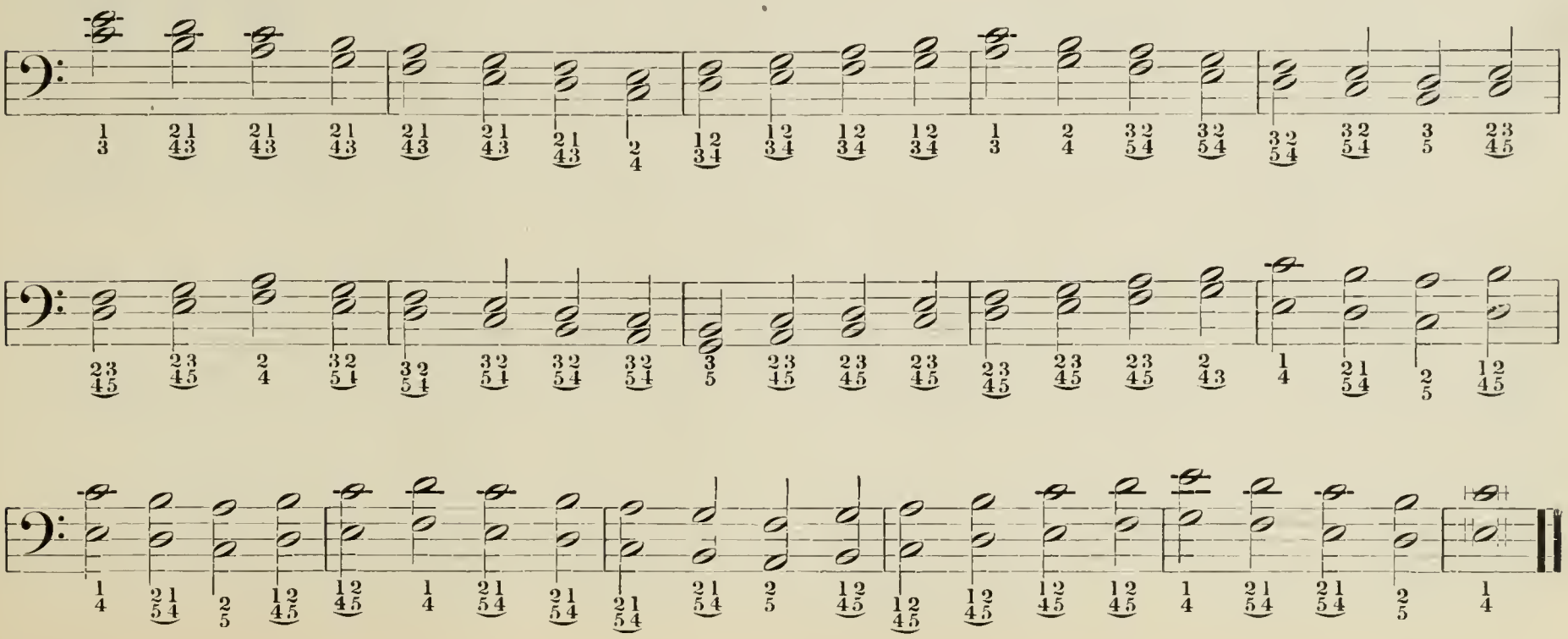
The student should also play slowly with each hand two octaves of all the major scales, shifting 1 2, 2 3, and 3 4 in turn.

Exercises for Shifting the Fingers in Thirds or Sixths.

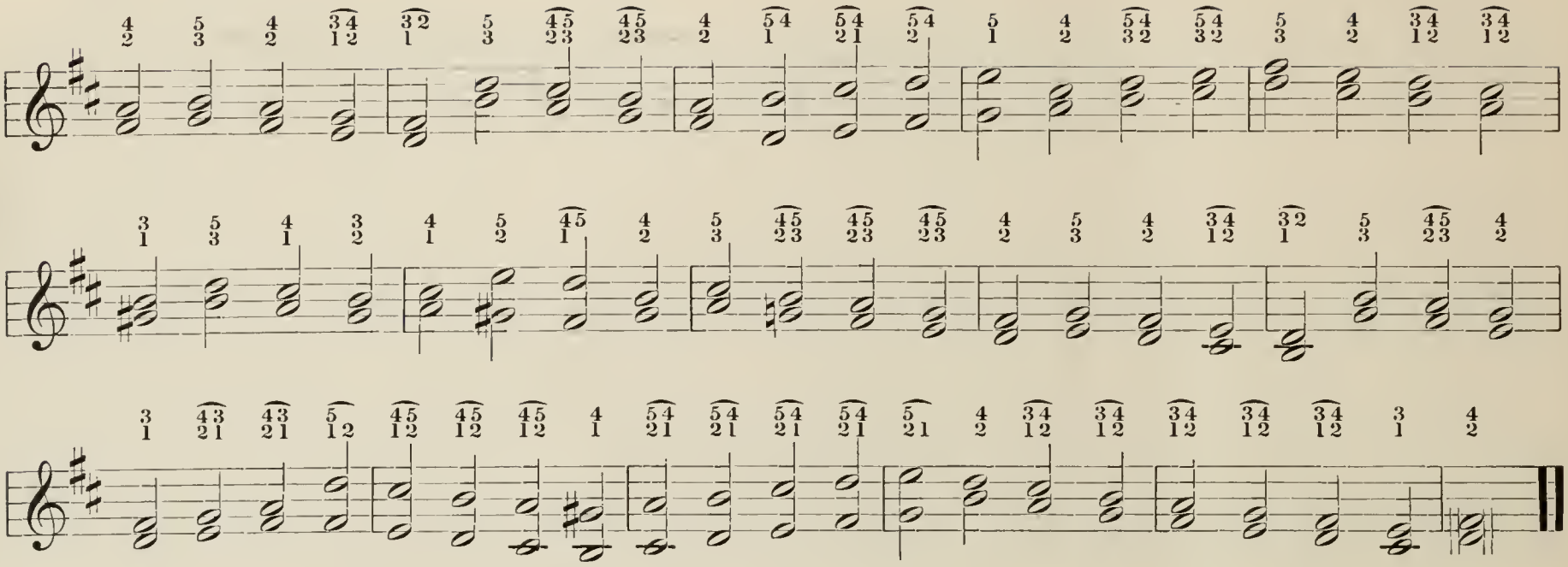
98. Right hand.



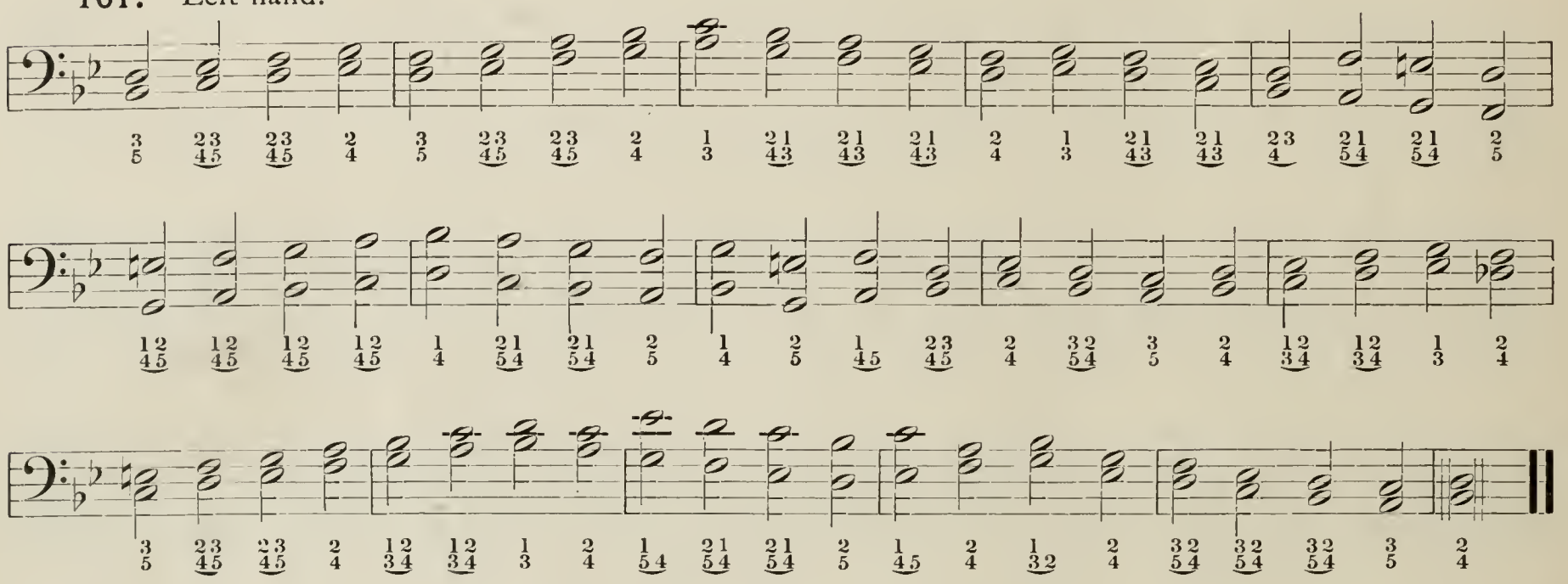
99. Left hand.



100. Right hand.



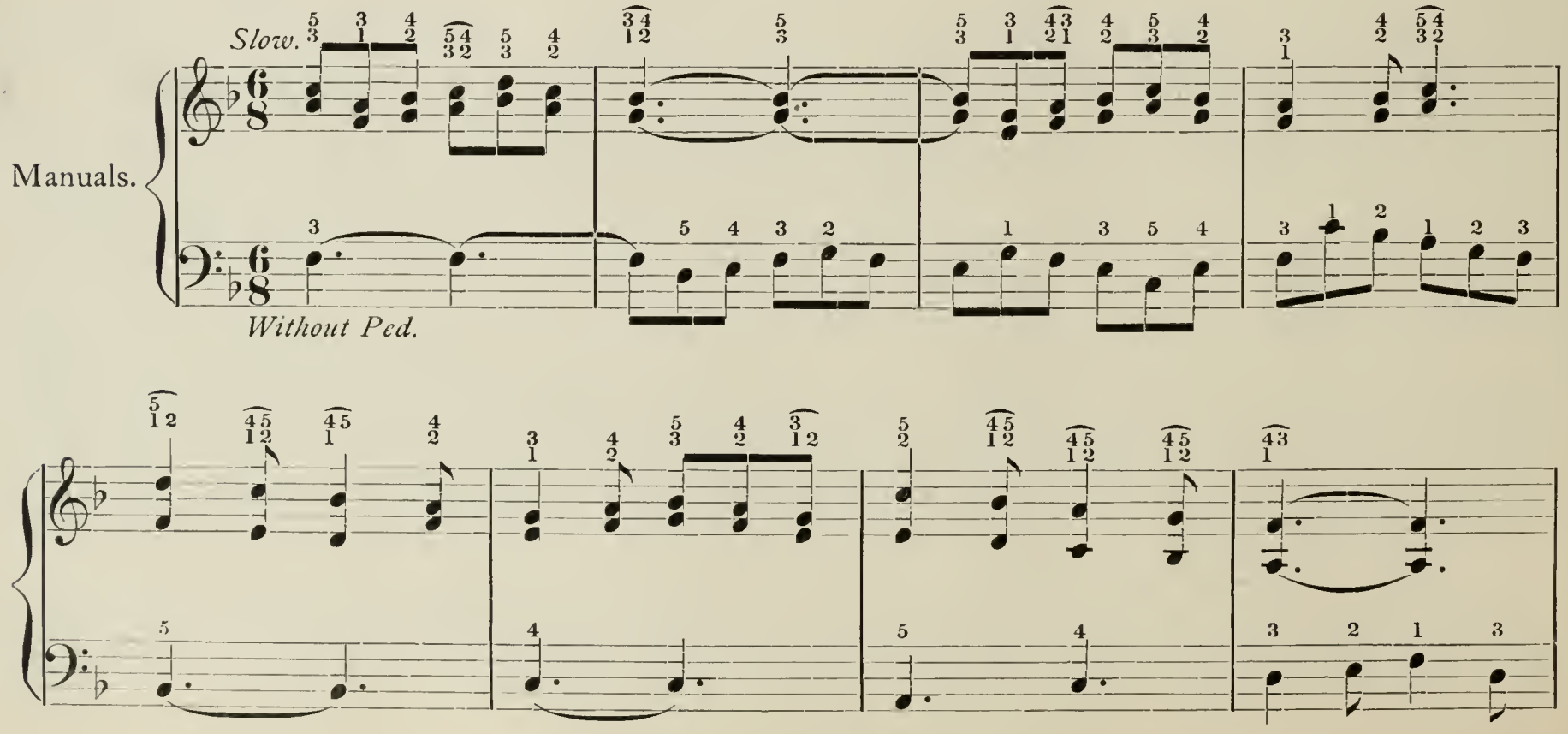
101. Left hand.

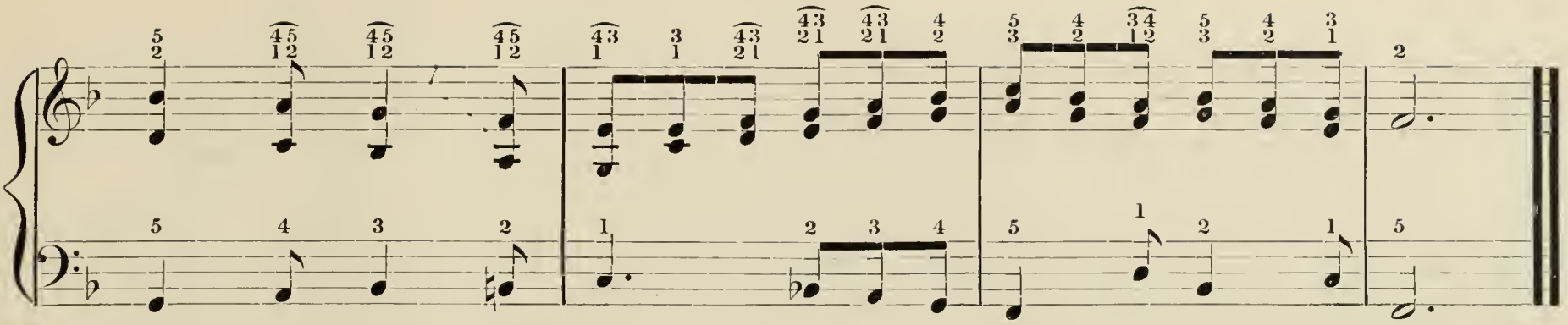


Exercises on the Legato Touch.

These exercises should be played several times on each manual (Great, Swell, Choir).

102.



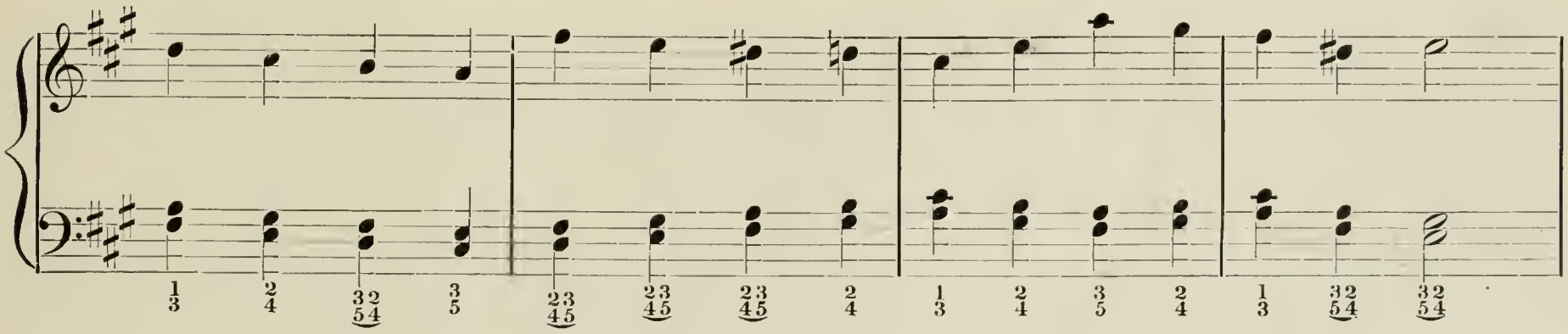


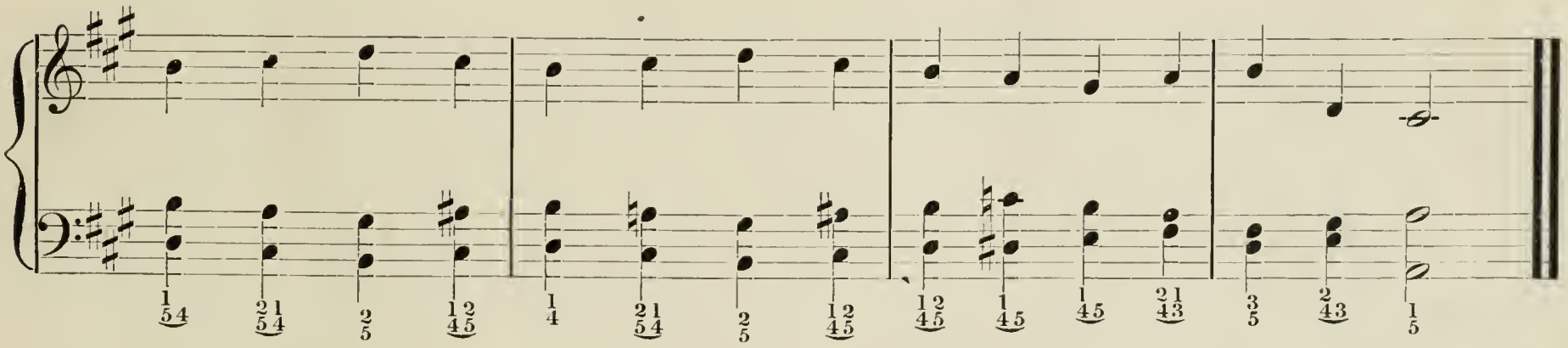
103.

Slow.

Manuals.

Without Ped.



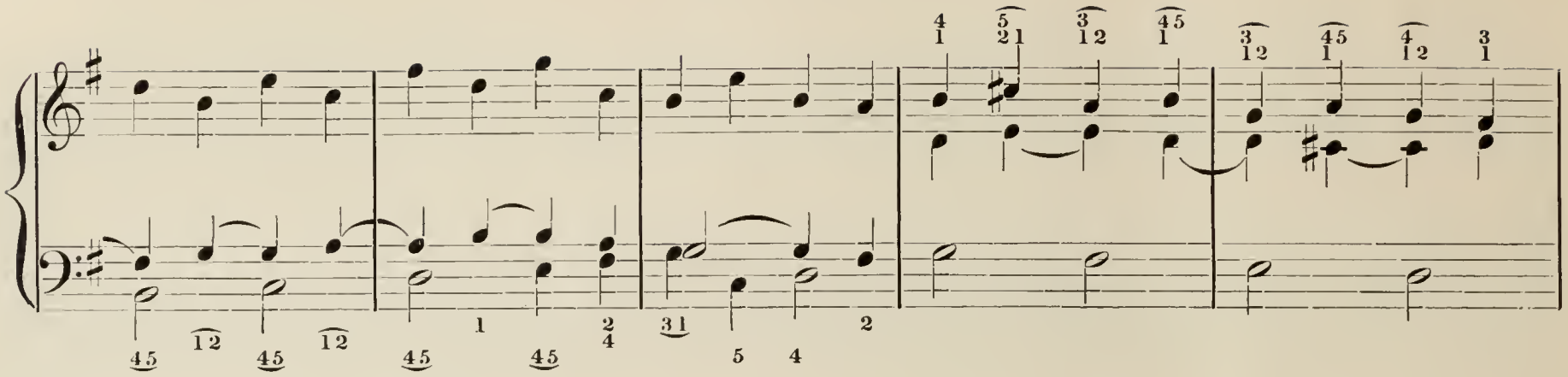


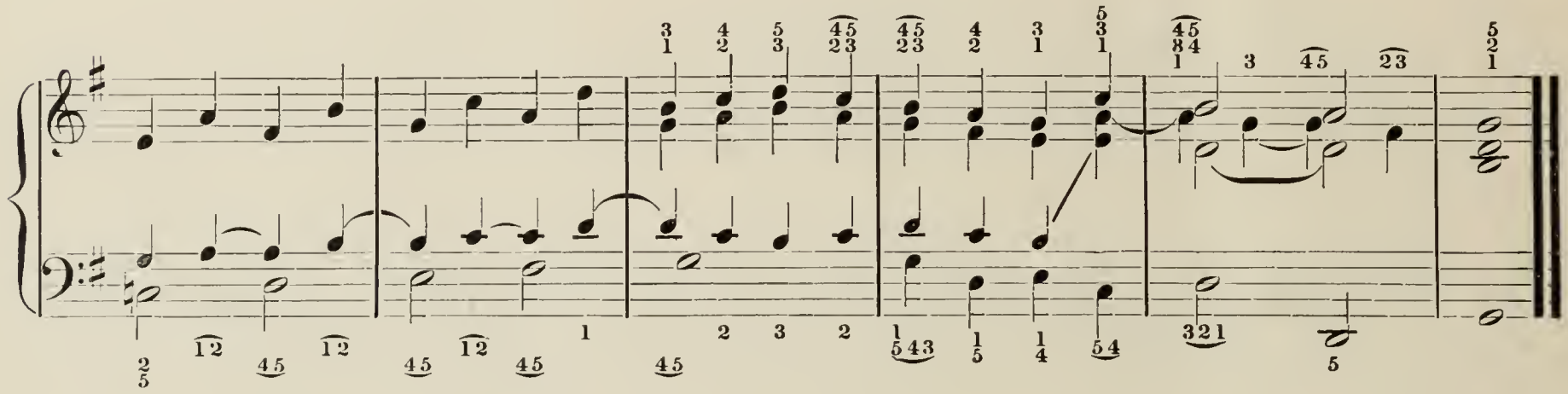
104.

Slow.

Manuals.

Without Ped.



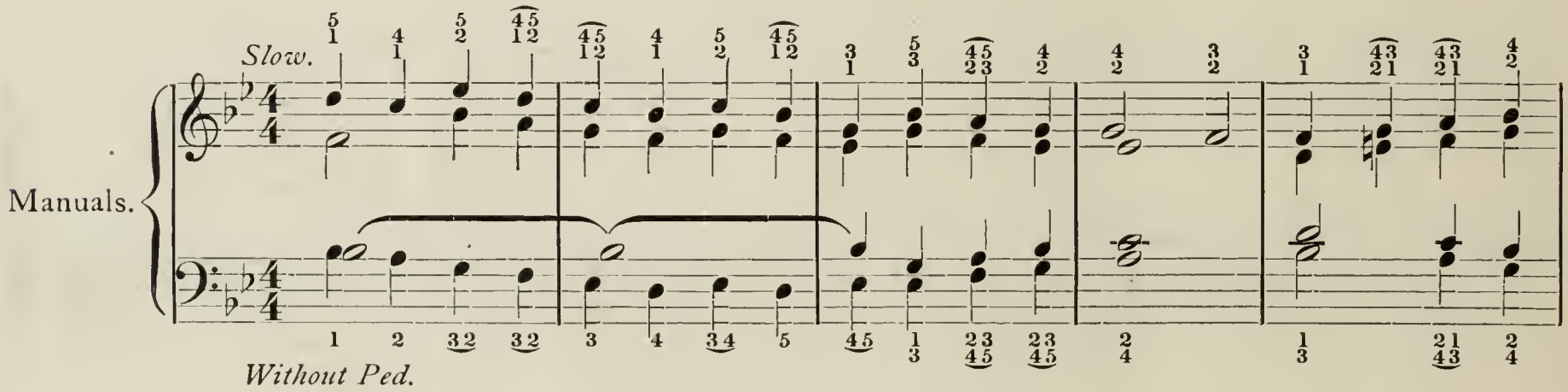


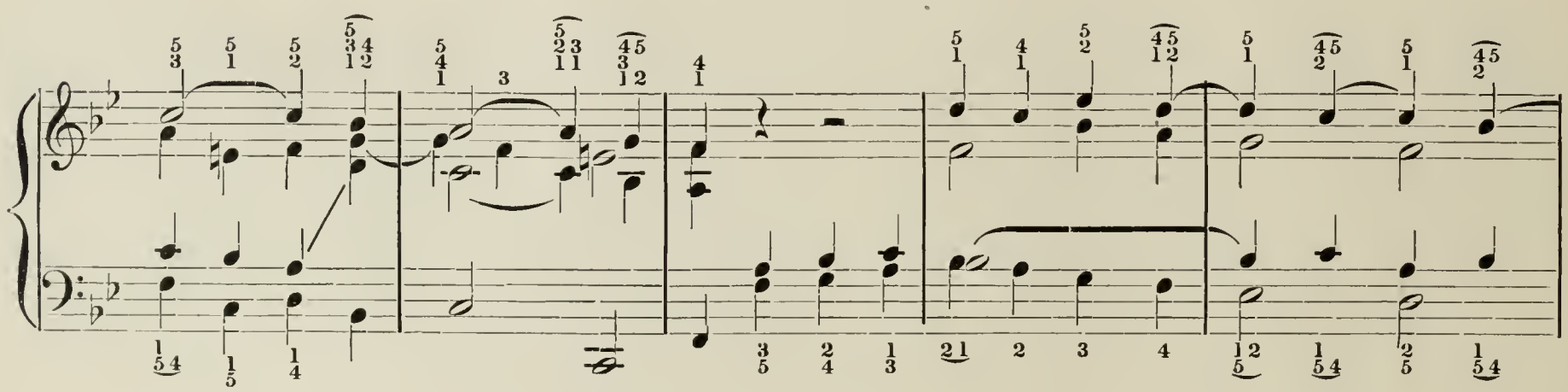
105.

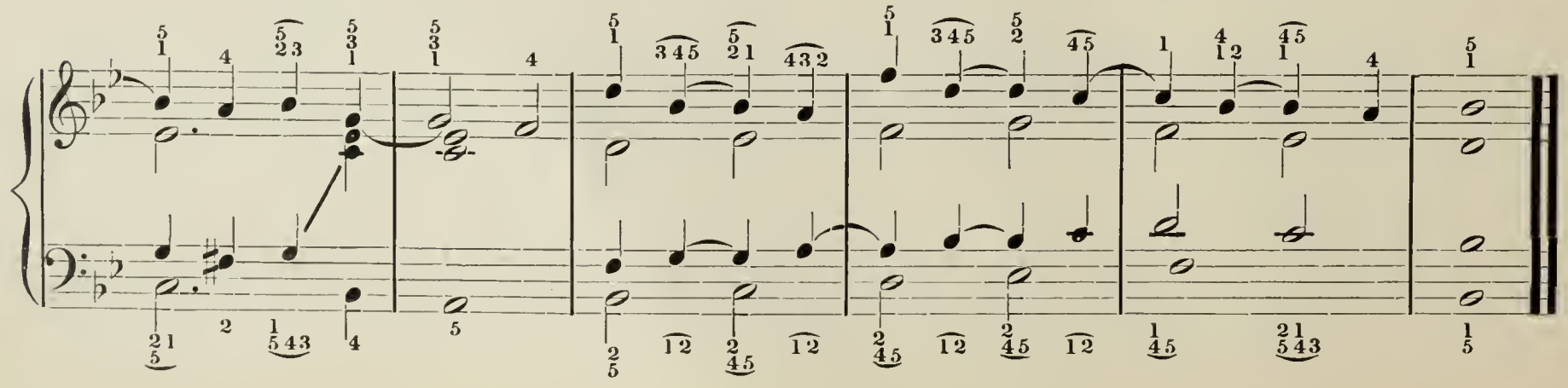
Slow.

Manuals.

Without Ped.







106.

Slow.

Manuals.

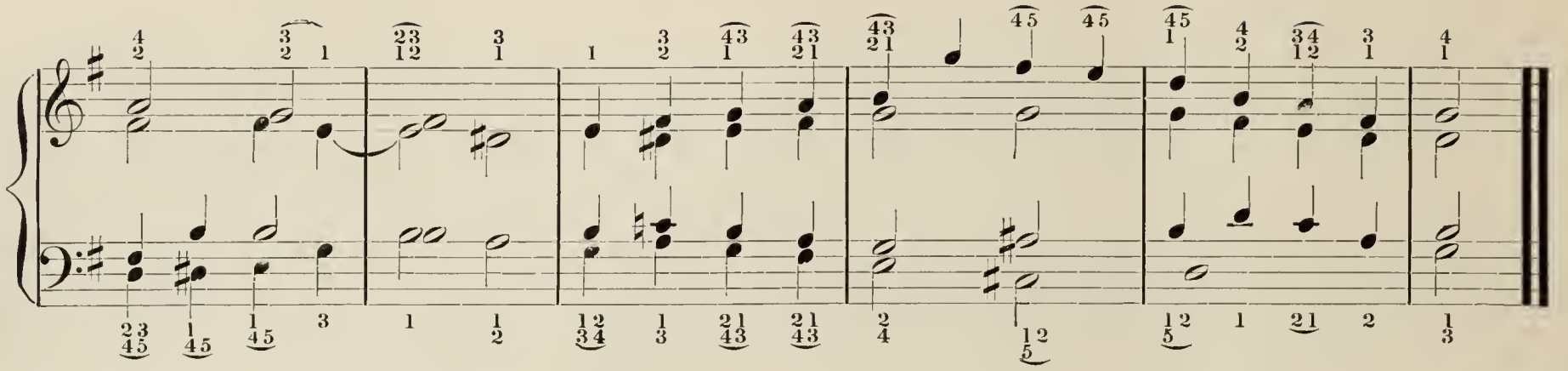
Without Ped.

107.

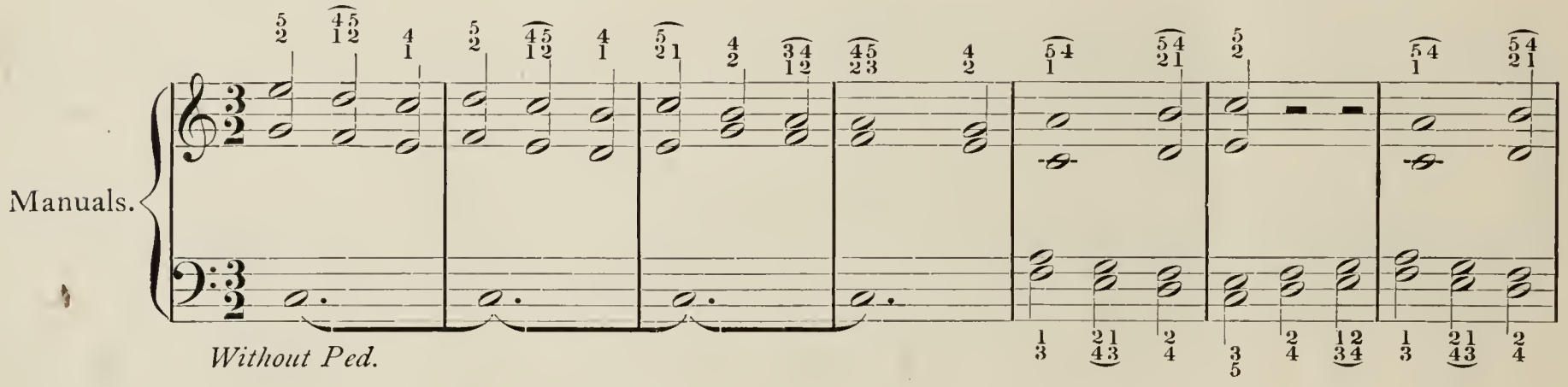
Slow.

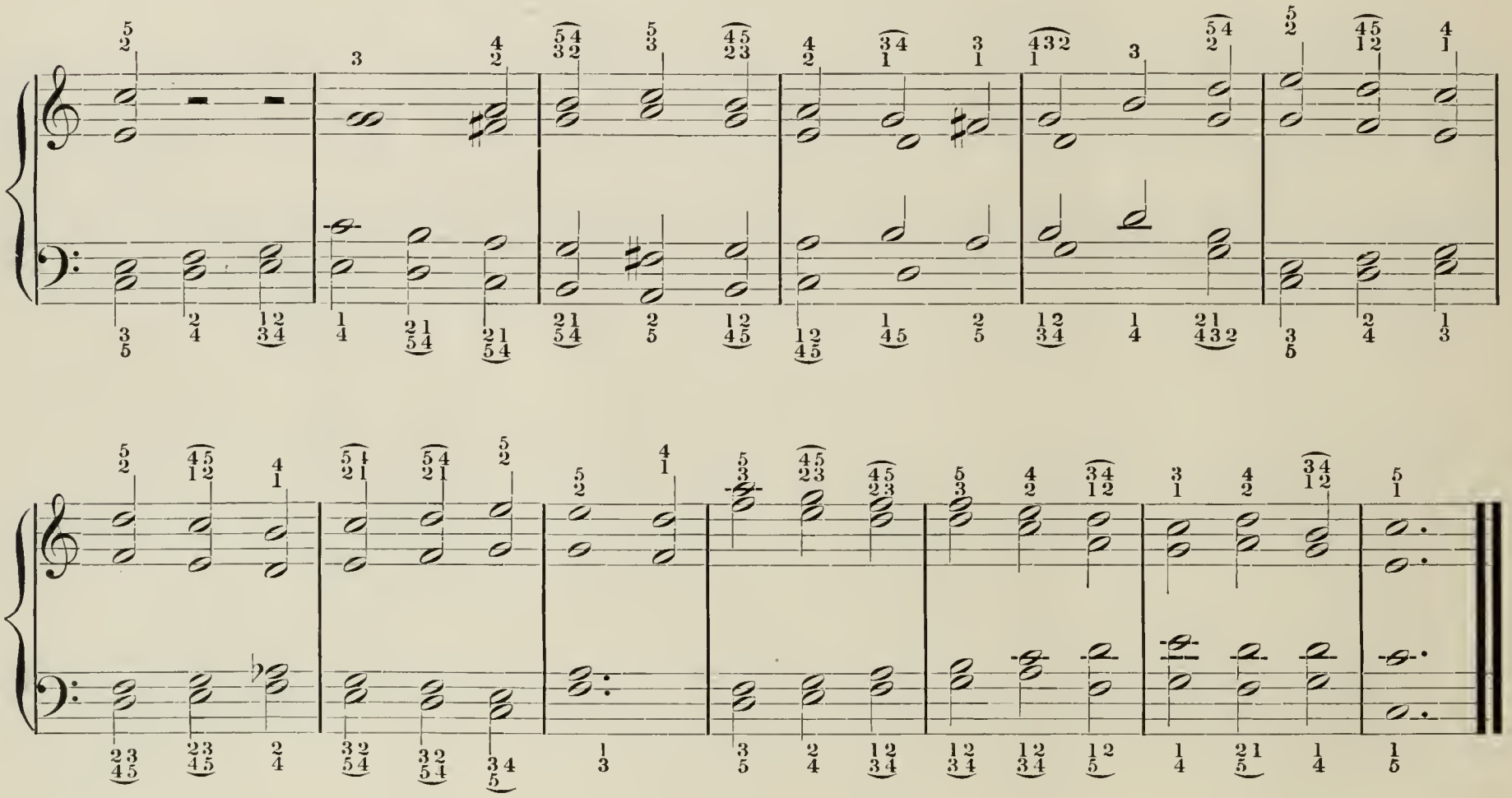
Manuals.

Without Ped.



108. *Slow.*

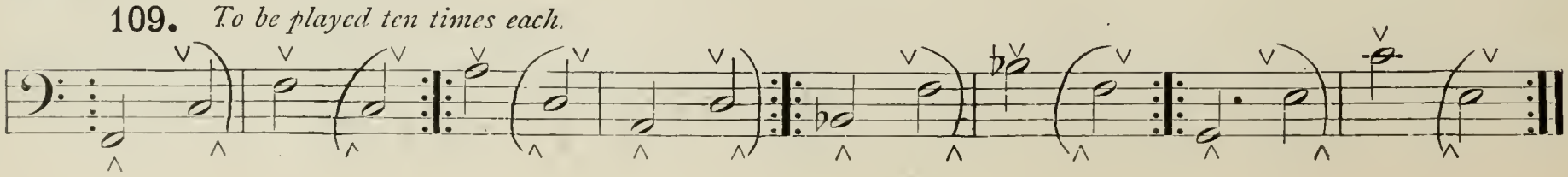




Exercise for Shifting the Feet on One Pedal-key.

The feet have also to shift occasionally in order to avoid a *staccato* style. But this rarely, if ever, has to be done on a short key or sharp.

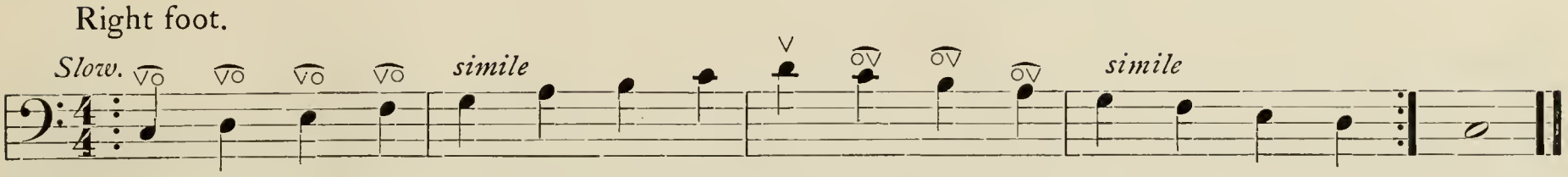
109. *To be played ten times each.*



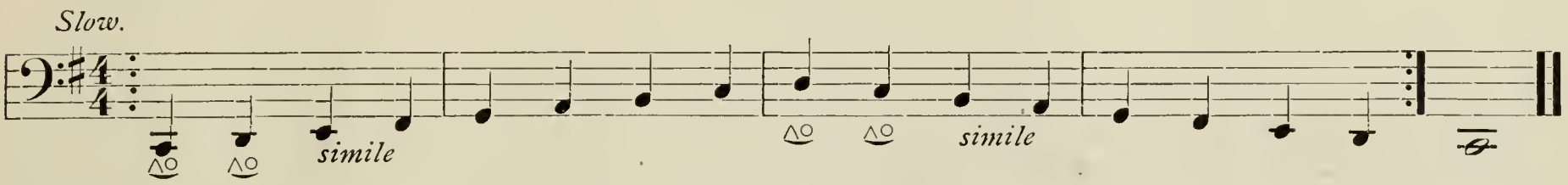
Supplementary Pedal Studies.

Exercises in changing from toe to heel of the same foot on one note.
In all these Supplementary Pedal Studies increase the tempo as soon as proficiency is obtained.

Right foot.

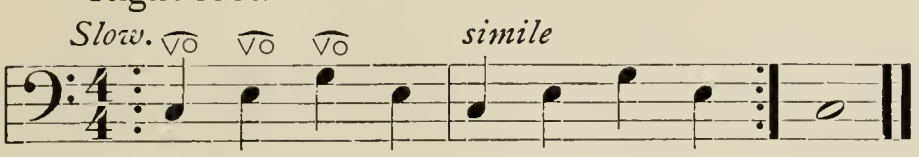


Left foot.

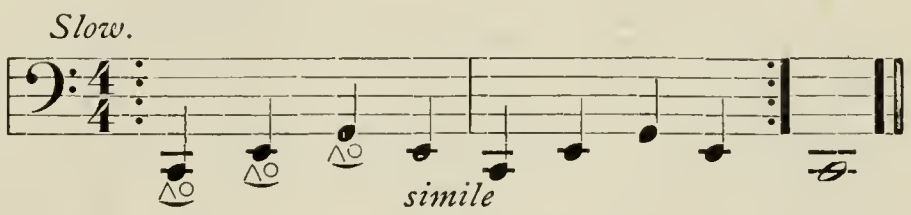


Care must be observed to obtain a good *legato*.

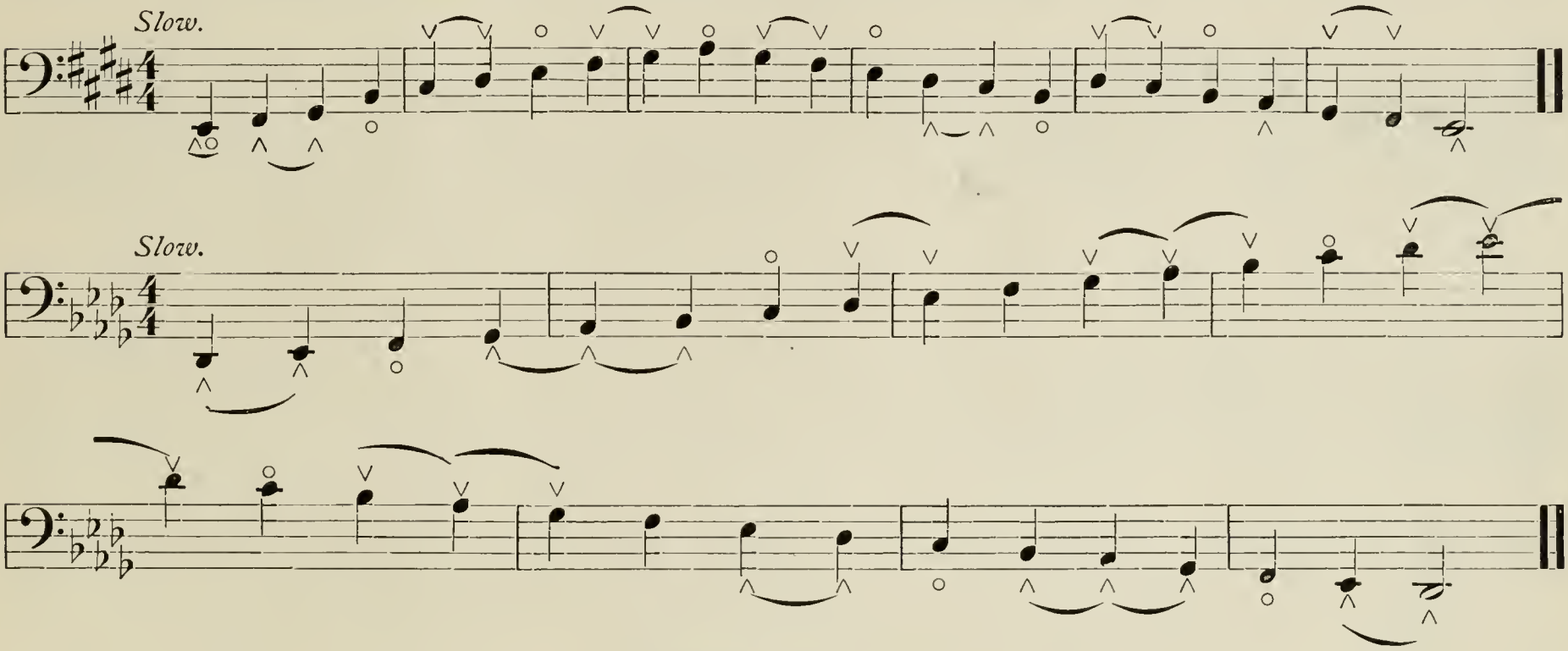
Right foot.



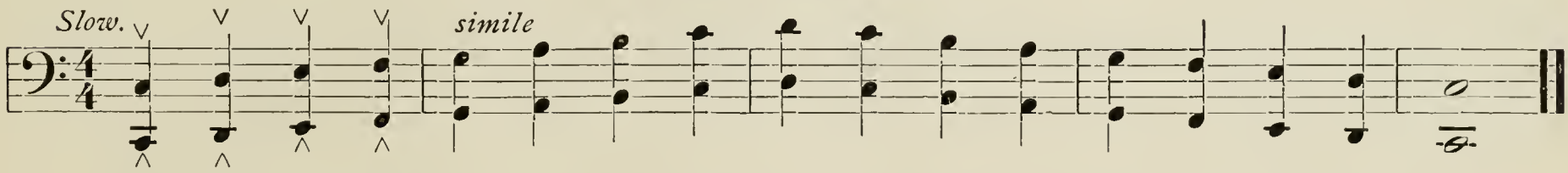
Left foot.



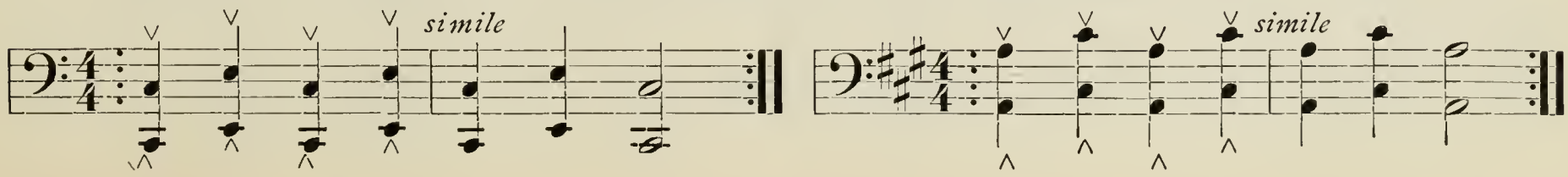
In sliding from one sharp or flat to another, care must be taken to slant the broader part of the foot sideways, so that sliding or passing to the next raised note may be accomplished with ease and smoothness.



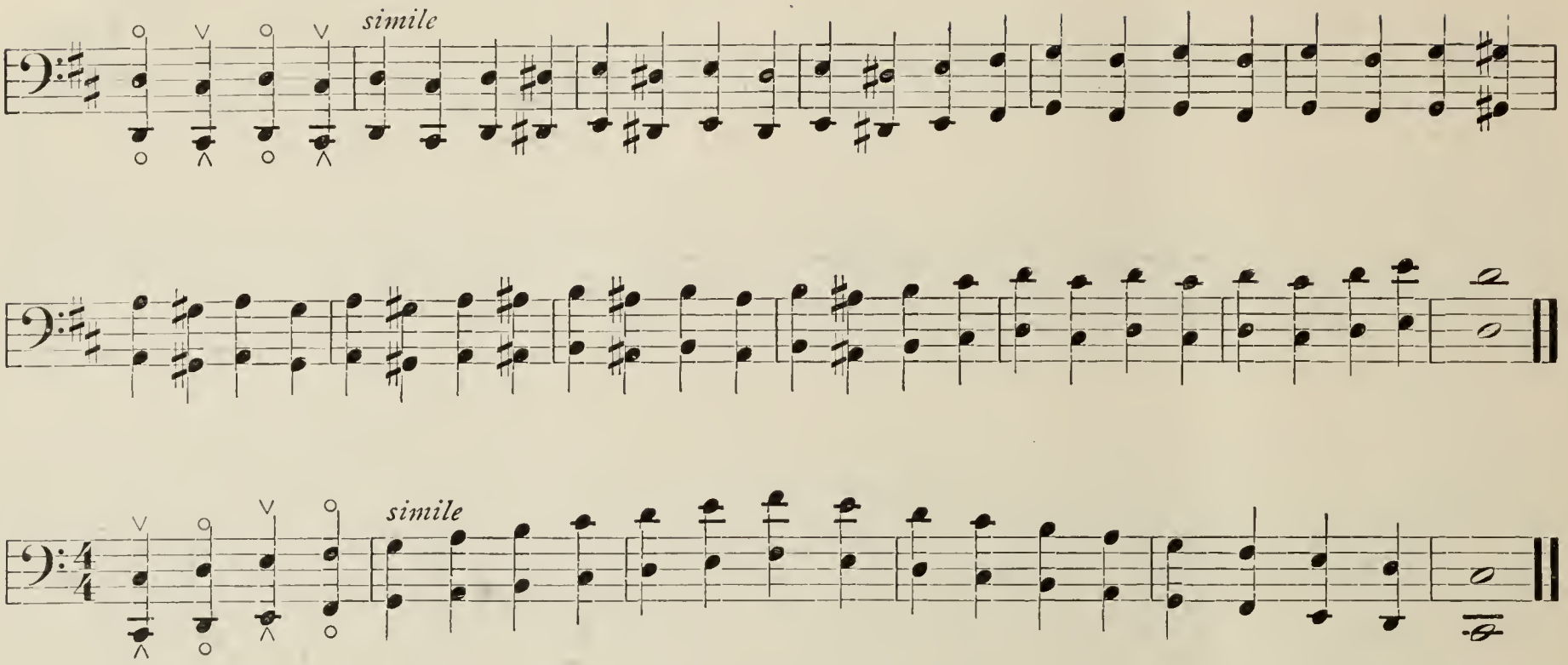
Octave Exercises.



The student is strongly advised to use all the major and minor scales with the above footing.

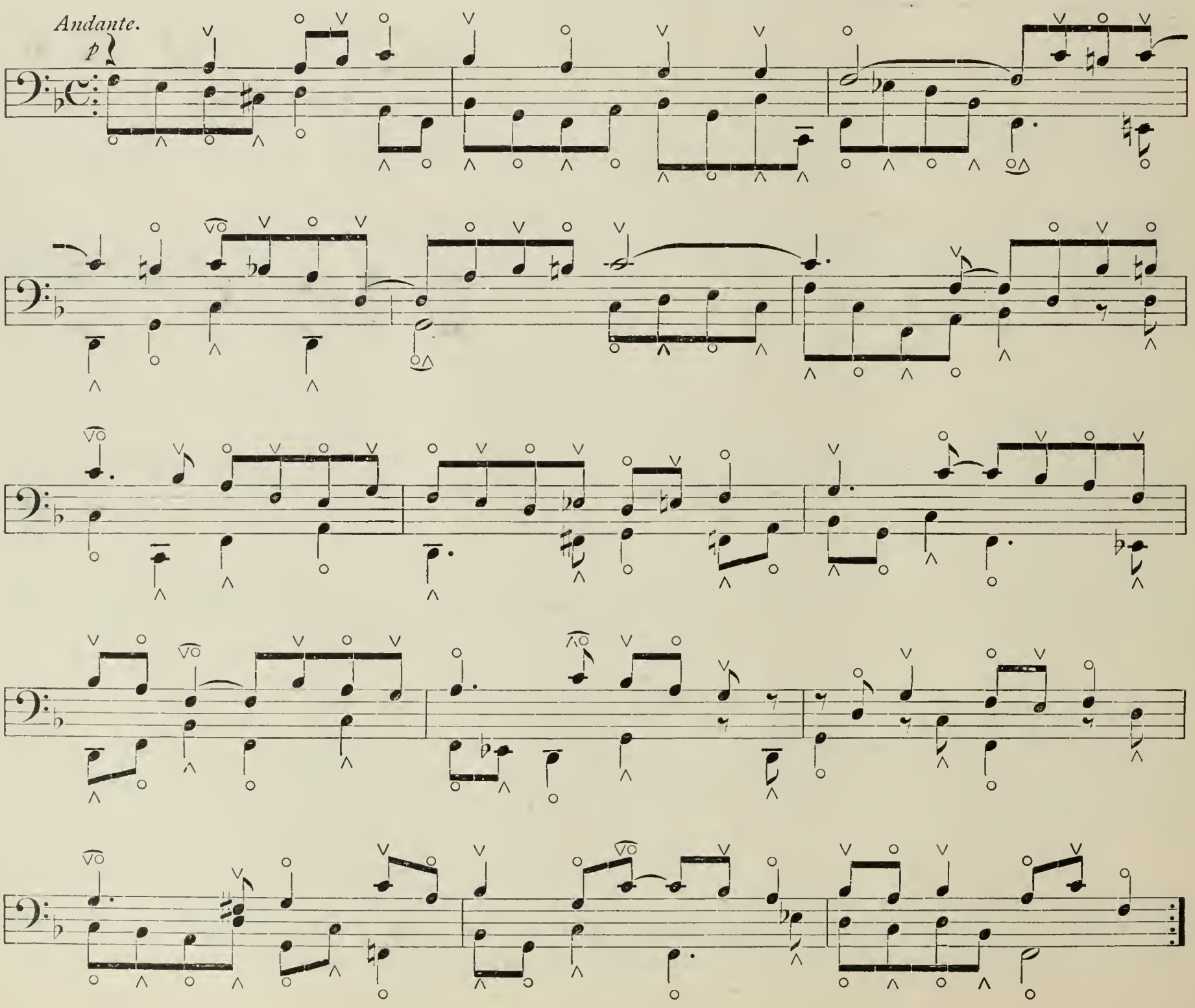


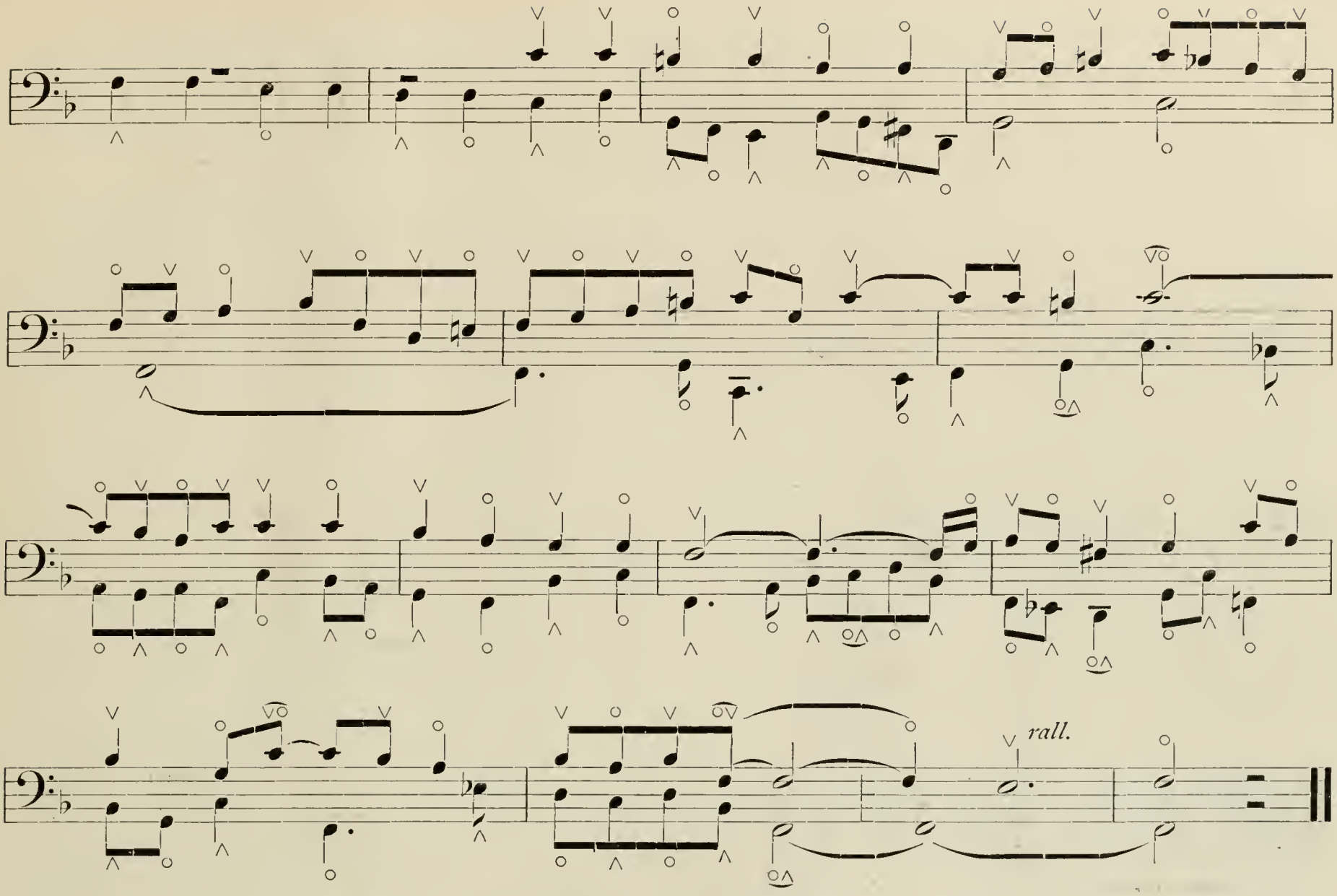
Exercise in using toe and heel.



The following *Double Pedal* is from J. S. Bach's Choral Prelude, "We all believe in one God." Great care should be taken to make it as smooth as possible.

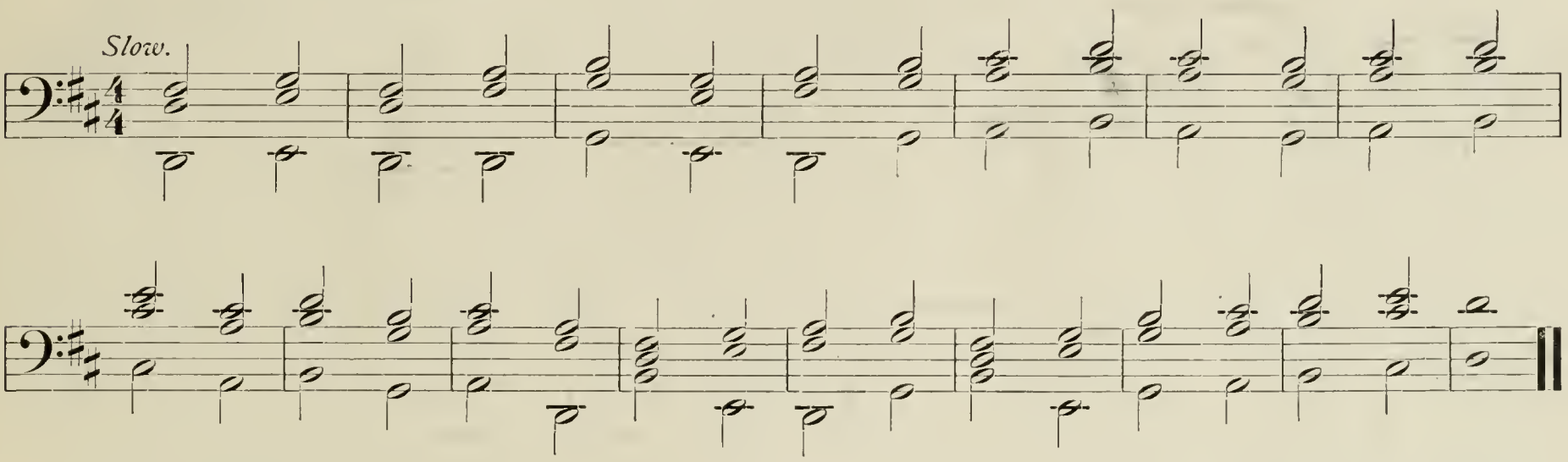
Registration: Violoncello 8′, or Bass Flute 8′, only.





Exercise in Chord-playing.

Founded upon the pedal-part in Guilmant's First Sonata in D, Op. 42.



These exercises may be supplemented by studies from Nilson's "Pedal Studies," Buck's "Studies in Pedal Phrasing," and "Modern Progressive Pedal Technique," by Clemens, in 2 vols.

Hints on Organ Accompaniments.

The subject of organ accompaniments for the Church service is so broad that it would require a large volume to treat it with anything approaching completeness. A few hints are here given to serve as a guide, and lead the student to a better understanding of a difficult subject. It is well for the student to begin the study of Hymns, Chants, Anthems, and the accompanying of general service music, at an early stage in his career. Much valuable information may be gained by attending services and rehearsals, and noting carefully how the organ is used by a competent organist.

The first thing to be learned in the accompanying of voices is the necessity for the predominance of eight-foot tone. The eight-foot tone is absolutely essential on account of being in unison with all voices, and stops of higher or lower pitch are almost useless without it.

The Open Diapason, 8-foot pitch, of metal, is the foundation tone-quality of the organ, and so named because all the pipes are made open in contradistinction to the Stopped Diapason, 8-foot pitch, of wood, with a stopper placed in the upper end of each pipe.

There are no stops in the organ more valuable than the Diapasons, on account of their tone-quality which blends agreeably with other stops, and gives great support to the voice.

The Principal (or Octave), 4′ metal, and the Fifteenth, 2′ metal, have open pipes, and are similar to the metal Diapason in quality of tone. When adding 4-foot stops it is essential to consider whether the voices are sufficiently brilliant, and whether the 8-foot tone forms a suitable foundation. In modern organs Flute-stops of 8 and 4-foot tone (open pipes) have been so highly developed that in some cases they are of more service in accompanying soft passages than the full tone of the Diapasons. To complete the classification, the Stopped Diapason may be classed under Flutes; although somewhat less assertive, it is similar in tone-quality and extremely valuable both singly and in combination. The 4-foot Flutes are particularly valuable where a softer brilliancy is required without the acute quality of the Principal (or Octave).

Reed-stops are distinct in tone-quality from all the other organ-stops, because their tone is produced by the vibration of a brass tongue inserted in a cylindrical brass tube called the "reed." This is fixed in the "boot" and attached to the lower end of the pipe.

The 8-foot Reeds on the Swell are useful only in moderately loud passages and to heighten a climax. The Oboe and Clarionet are invaluable when used in *obbligato* accompaniments, but the Swell Reeds should be sparingly introduced, as they become tiresome if heard for a long period. When using the Oboe or Clarionet it is advisable to add the Stopped Diapason, or some similar stop, to give greater fullness and body. The Great Reeds are useful only for trumpet-like effects, and to add richness when the full organ is required.

String-stops are particularly valuable in accompanying, and although they do not support the voices like the Diapasons, their characteristic string-quality of tone is immediately felt. It is well to add a Flute or other soft 8-foot stop to modify the tone so as to blend with voices, and also to quicken the naturally slow speech of a string-stop. Organs differ one from the other in tone-quality, and this makes it absolutely necessary that the student should study his own particular instrument. Many charming effects may be obtained by contrasting the various tone-qualities; for example, a reed on one manual can be used against a flute on another, or string-tone will prove effective against flute-tone.

Hymn-Tunes.

The playing over of the tune for the choir or congregation preparatory to singing the hymn requires careful attention. How often does one hear a tune given out in a slovenly manner upon all kinds of fancy stops. In many cases the melody and harmony, if repeated many times in the music, are tied together and sound as one chord. This kind of playing tends to discourage good singing, and disturbs the natural rhythmic flow of the hymn. When playing over, or "giving out," the tune to the choir or congregation, observe strict time and use foundation stops of a clear quality of tone, such as the Diapasons on the Swell, or an Open Diapason on the Choir, without pedals. If the Great is used, the Melodia or a small Open Diapason will be effective. The reason for using stops of a clear and distinct quality of tone is to make each voice-part stand out for the benefit of the choir.

If the tune is not familiar, the melody may be played upon a solo stop, while the alto and tenor parts are given to a soft combination on another manual, and the bass part assigned to the pedals. After playing over the tune, give the full chord to start the hymn; by this means the congregation will have more confidence to join in the singing. The habit of giving the melody-note or pedal-note in advance of the full chord, is objectionable, and should be avoided. Another undesirable feature is the rolling of the first chord in arpeggio-form from the pedal-note upwards, in some cases introducing meaningless passing-notes, until the whole chord is complete. These habits cannot be too severely condemned, as they are foreign to all good taste in organ-playing. The writer has heard these faults of rolling the first chord, and inserting all kinds of appoggiaturas, introduced into legitimate organ music. No one with good taste would think of adding such things to a sonata by Mendelssohn or Rheinberger. Why do so in simple hymns?

The first two verses, as a general rule, should be played upon a good, solid combination, to give the congregation a better chance to join in the singing. A general registration like the following may suffice: — *Great*, Diapasons 8′ and Octave 4′, coupled to *Swell*, Diapasons 8′, Octave 4′, and Reeds. Carefully notice,

before beginning, whether the hymn to be sung is jubilant or not. If it is of a more quiet character, the Great Diapasons 8′, coupled to a soft Swell, will be ample support for the congregation. The beginnings and endings of each verse must be clean cut, and a slight pause of one measure made between the verses. This will allow the organist time to change his combinations, which must be done quickly and effectively. It is well for the student to remember to use both feet in playing the pedal-part of hymns and other church music, because it is almost impossible to preserve a good *legato* in any other way. After the first two verses the organist may introduce contrapuntal devices without changing the harmonies. This filling in cannot be done successfully without a complete knowledge of harmony and counterpoint, the study of which is necessary to every organ student. Distribute the filling in between the two hands, and do not add notes so low, in the left hand, as to make the harmony sound thick and heavy. For practical examples of varied accompaniments to hymns, the student should examine Sullivan's arrangement of "The Son of God goes forth to war" (St. Ann's tune), and "Praise, my soul, the King of Heaven," by Goss.

Care must be exercised, when the melody-notes are repeated several times, to sound each note distinctly; but if the harmonies are repeated they may be sustained, except where the sense of the words demands a break. In tunes where the soprano, alto, and tenor parts are moderately high, the bass part may be played on the pedals an octave lower in addition to the left hand playing the bass part at its original pitch. This transposition of the bass part an octave lower gives greater support to a large body of singers.

When using 16-foot stops on the manuals, keep the parts of the hymn well up on the keyboard, to prevent an unpleasant thickening of the tone. These 16-foot stops should be very carefully considered, and used with judgment. If the alto or tenor part is melodious, it may be brought into prominence by playing it upon a solo stop, and — provided the student has any gift of invention — there is nothing more charming than to hear a new melody played above or below the soprano part.

It is effective to have one or more verses sung unaccompanied, when a hymn is long, the organ entering later with great freshness and effect. In the last verse the student may hold the last chord with one hand while with the other he reduces the organ gradually to the softest stop. This is but an imitation of the effect of a chord dying away in the large European cathedrals, where reverberation produces a *morendo* without the aid of mechanical means. It is well to practise church music with one hand and pedals, allowing the free hand to make any desired changes in the registration or to give directions to the choir.

The "dragging" of the choir or congregation during service can be corrected very quickly by adding bright 4-foot stops and playing *staccato* chords until the original tempo is resumed. Much of this dragging is due to the careless way in which the hymns are played. If the organist would cultivate, and train his choir into marking a strong first beat in every measure, it would stimulate the interest of the choir and congregation to better things.

In adding or withdrawing stops during performance remember to make the desired changes upon the strong accent of the measure. If the student will experiment by adding stops on the *unaccented* beats of the measure, he will observe the unsatisfactory effect produced.

Chanting.

The Anglican Chant is simple, as a musical form; but to play an accompaniment to suit the varying sentiment of the words, materially increases the difficulties. In order to obtain perfect freedom in the accompanying of the Psalms it is necessary that the player should have a thorough knowledge of the words.

As a general rule, the Great Organ Diapasons may be used for bright and joyful verses, or when both sides sing together. The Swell or Choir Organs will be sufficient for verses which are sung antiphonally. Words of a quiet character may be supported by the soft flue-work of the Swell or Choir Organs, and the addition of the Swell Reeds will be ample to give emphasis to an occasional bright verse.

The temporary suspension of the Pedal Organ is often neglected by the young organist. There is nothing more effective than the entry of the pedals after a silence of a few verses. The Doubles, or 16-foot stops on the manuals, should be sparingly used, particularly those on the Great Organ. Warning must be given to avoid exaggeration in the expression of the words. Attempts at "word-painting" may still be heard; the reader may recall efforts to represent "drops of rain" falling (illustrated by rapid staccato passages on a Piccolo stop); and "the heavens dropping," or other portions of the Psalms, illustrated in a most startling and irreverent manner.

Unison singing with varied harmonies is effective for special verses, but the player must be careful to select a chant that will be within easy range of the different voices.

Gregorian Chant.

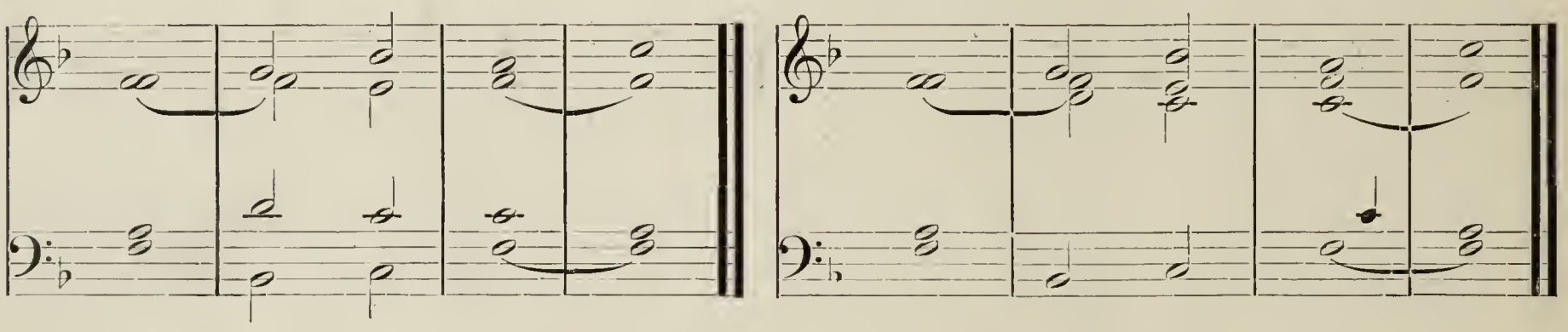
In the accompaniment of Gregorian Chants the student should remember that a more solid organ combination is required, because they are generally sung in unison. Their treatment is similar to that of the Anglican Chant in the illustration of the text. When sung in unison they provide the organist with an opportunity to use his skill in adapting a suitable harmonization of the melody. A knowledge of the ancient Ecclesiastical Modes is essential, because the modern chromatic progressions are entirely foreign to the pure and noble tendency of these ancient melodies. The student is advised to read the books on accompaniment and general church music, listed at the end of this work, for general information.

Chorales and Hymn-tunes.

The beautiful chorales now given will, whilst teaching the *legato* touch, illustrate some important principles.

The hands have mutually to assist each other. For example, in playing a chorale on the manuals without using the pedals, two parts will ordinarily fall to each hand, namely, the treble and alto to the right hand, and the tenor and bass to the left hand; but, when notes are too far apart to be taken by the *left* hand, the right hand must help, and *vice versa*. Thus:

Written. Played.



When playing (without pedals) from ordinary hymnals, in which the treble and alto parts are in the upper staff and the tenor and bass in the lower, constant attention must be given to this principle. In the following chorales the right-hand part has been purposely placed in the upper staff, and the left-hand part in the lower, so that the student may give undivided attention to the *legato* style of playing.

It will be found that a most useful and interesting course of practice can be obtained by playing ordinary hymn-tunes in *three* different ways:

First (*see* Exercise 110), on the manuals alone;

Secondly (*see* Exercise 111), by playing the two upper parts (treble and alto) with the right hand, assigning the *tenor part only* to the left hand, and the bass to the feet;

Thirdly (*see* Exercise 112), by playing the treble part only as a solo, and taking both the alto and tenor parts with the left hand, and the bass with the feet.

In playing in the first of the three ways just described, entire attention can be given to the *legato* touch. Occasionally a note must be transferred from the left to the right hand without repetition. An example of this will be found in the sixth measure from the end of Exercise 110.

In playing in the second manner, great care should be taken to prevent the left hand from *doubling the pedal part*. The left hand will often have to play a note already drawn down by the pedal coupler; in such cases the finger should always remain on the note as if its presence were required there. Although the left hand should not play the pedal part, it may and should sometimes assist the right hand.

In arranging four-part music for the third method of playing above mentioned, it will sometimes happen that the left hand is unable to stretch the interval between the tenor and alto parts. When this is the case, the two notes must be inverted, or played in any position most convenient.

Chorale. — "Ermunt're dich, mein schwacher Geist."

110.

JOHANN SCHOP (1641).
Harmonized by J. S. BACH.

Gt. Diapasons.
Slow.

Manuals.

Without Ped.

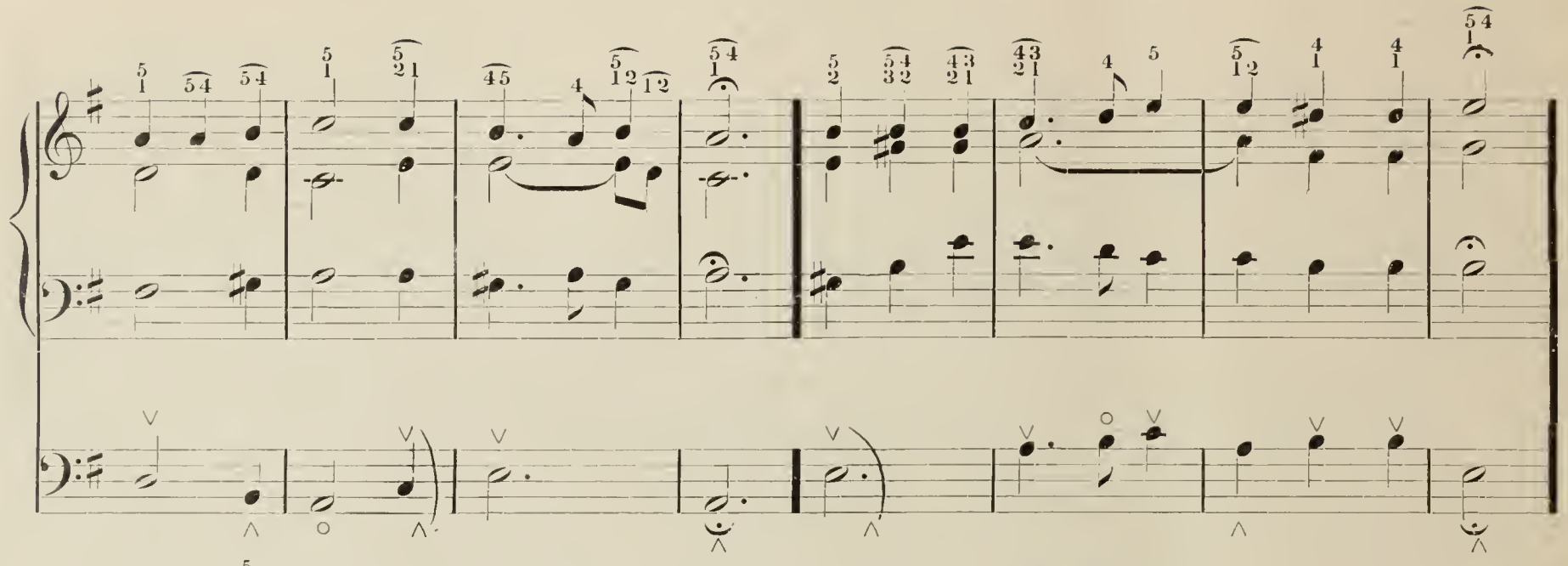
111.

Gt. to 4′, coupled to Sw.
Slow.

Manuals.

16′, and Gt. to Ped.

Pedal.



112.

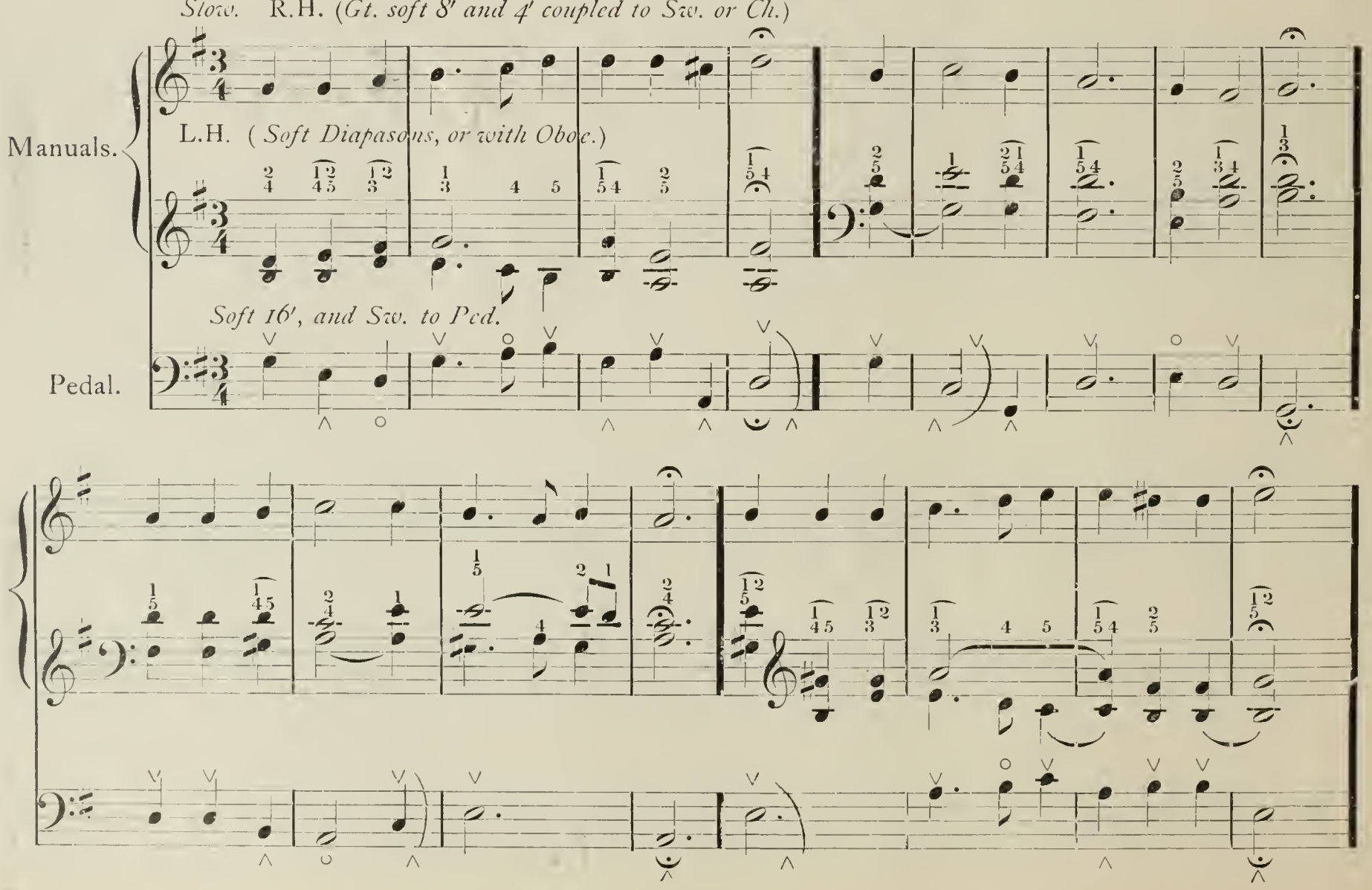
Slow. R.H. (*Gt. soft 8′ and 4′ coupled to Sw. or Ch.*)

L.H. (*Soft Diapasons, or with Oboe.*)

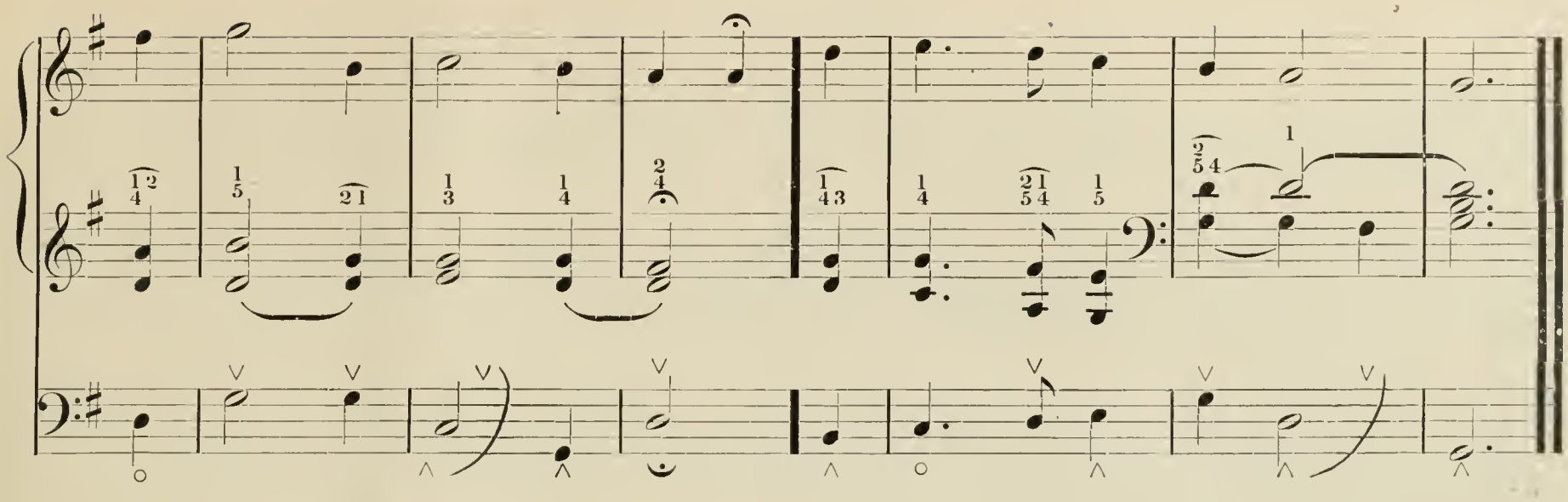
Manuals.

Soft 16′, and Sw. to Ped.

Pedal.



Gerrit de Jong, Jr.



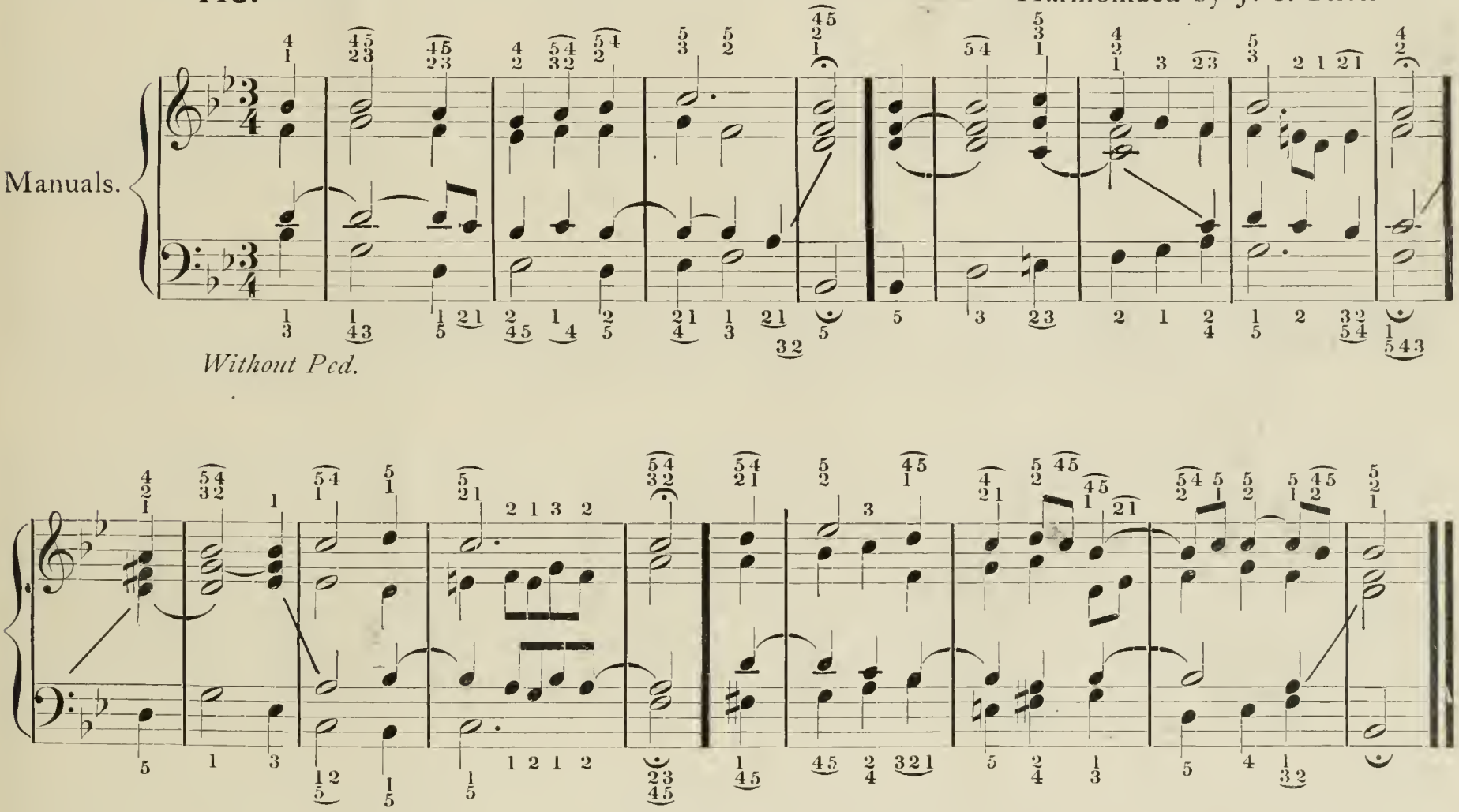
Chorale. — "Nun lasst uns Gott, dem Herren."

NICOLAUS SELNECCER'S G.-B., 1587.
Harmonized by J. S. BACH.

113. *Slow.*

Manuals.

Without Ped.



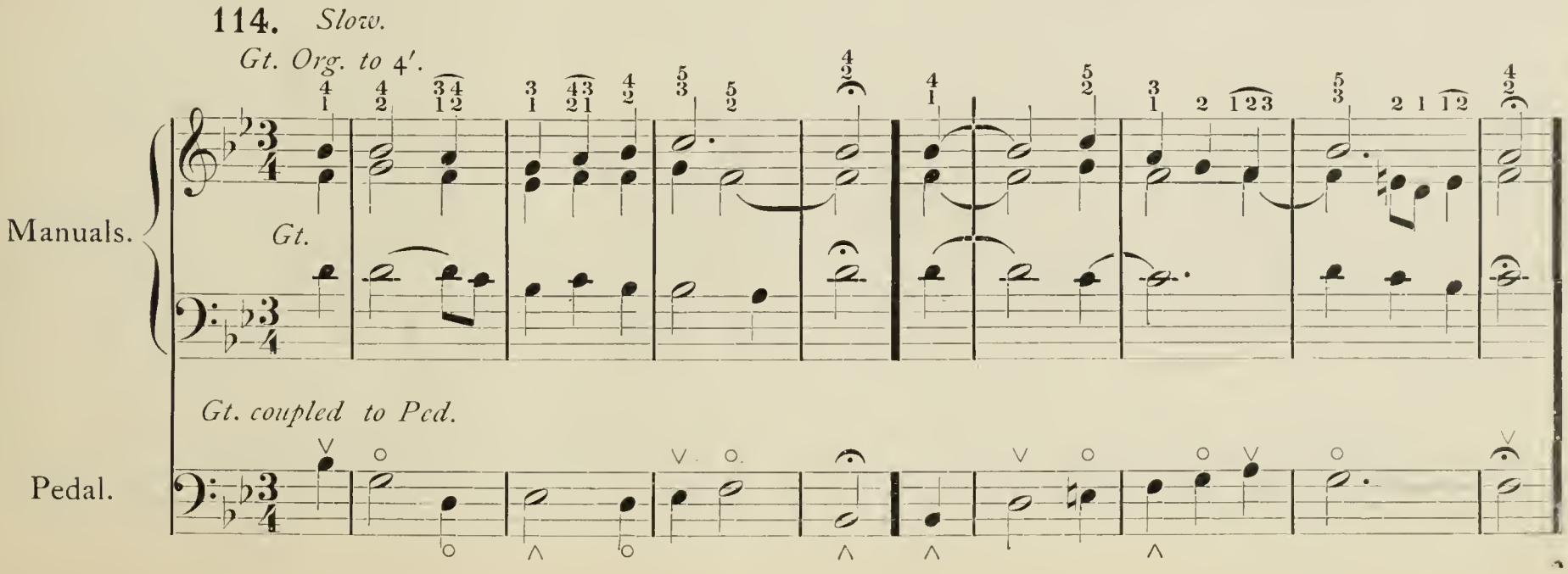
114. *Slow.*

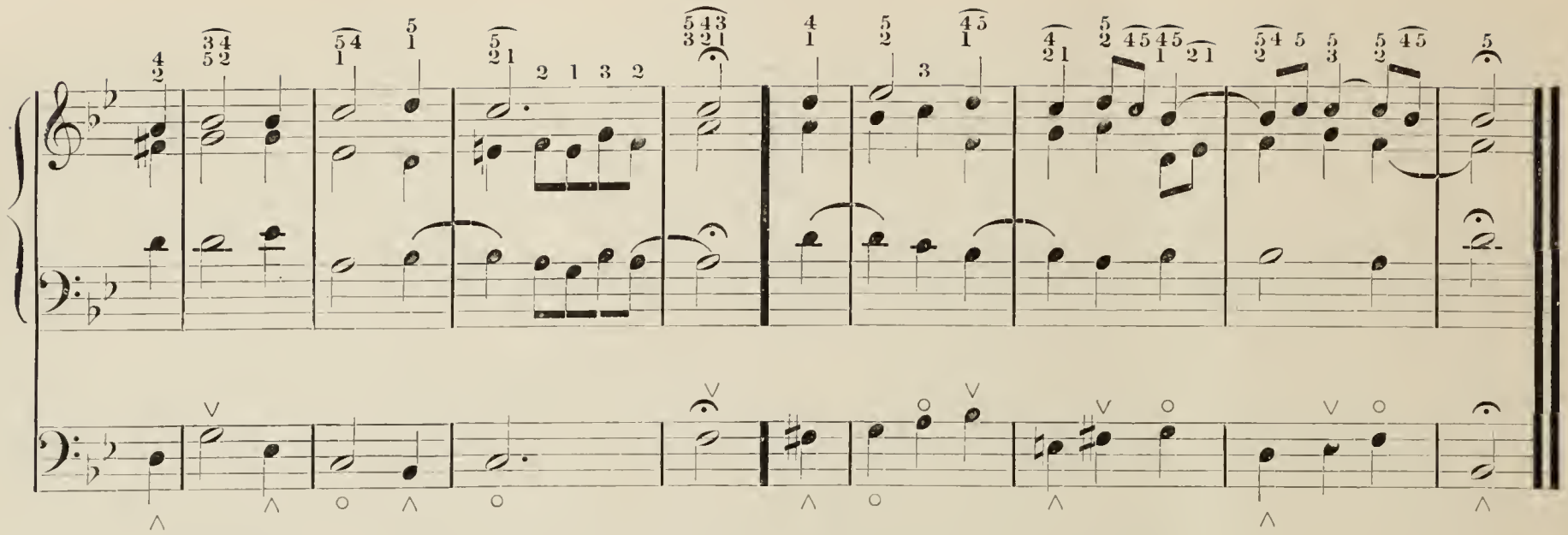
Gt. Org. to 4′.

Manuals. *Gt.*

Gt. coupled to Ped.

Pedal.





115. *Slow.*

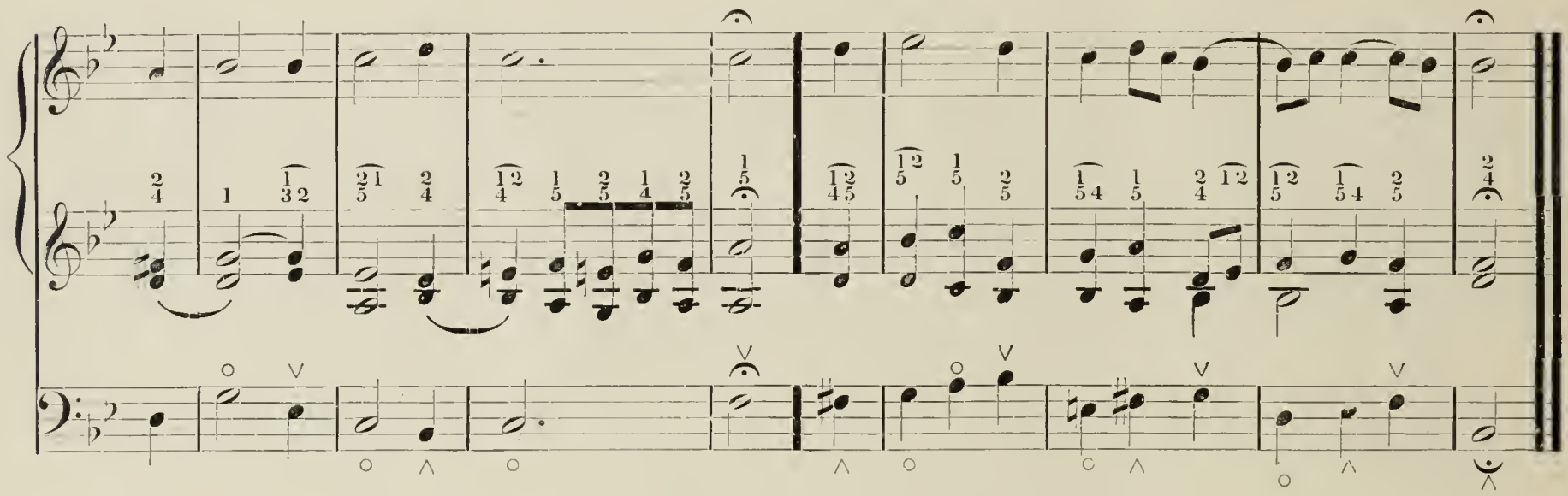
Solo. *Man. I.*

Manuals.

Man. II.

Man. II coupled to Ped. 16′.

Pedal.



Chorale. — "Herzlich thut mich verlangen."

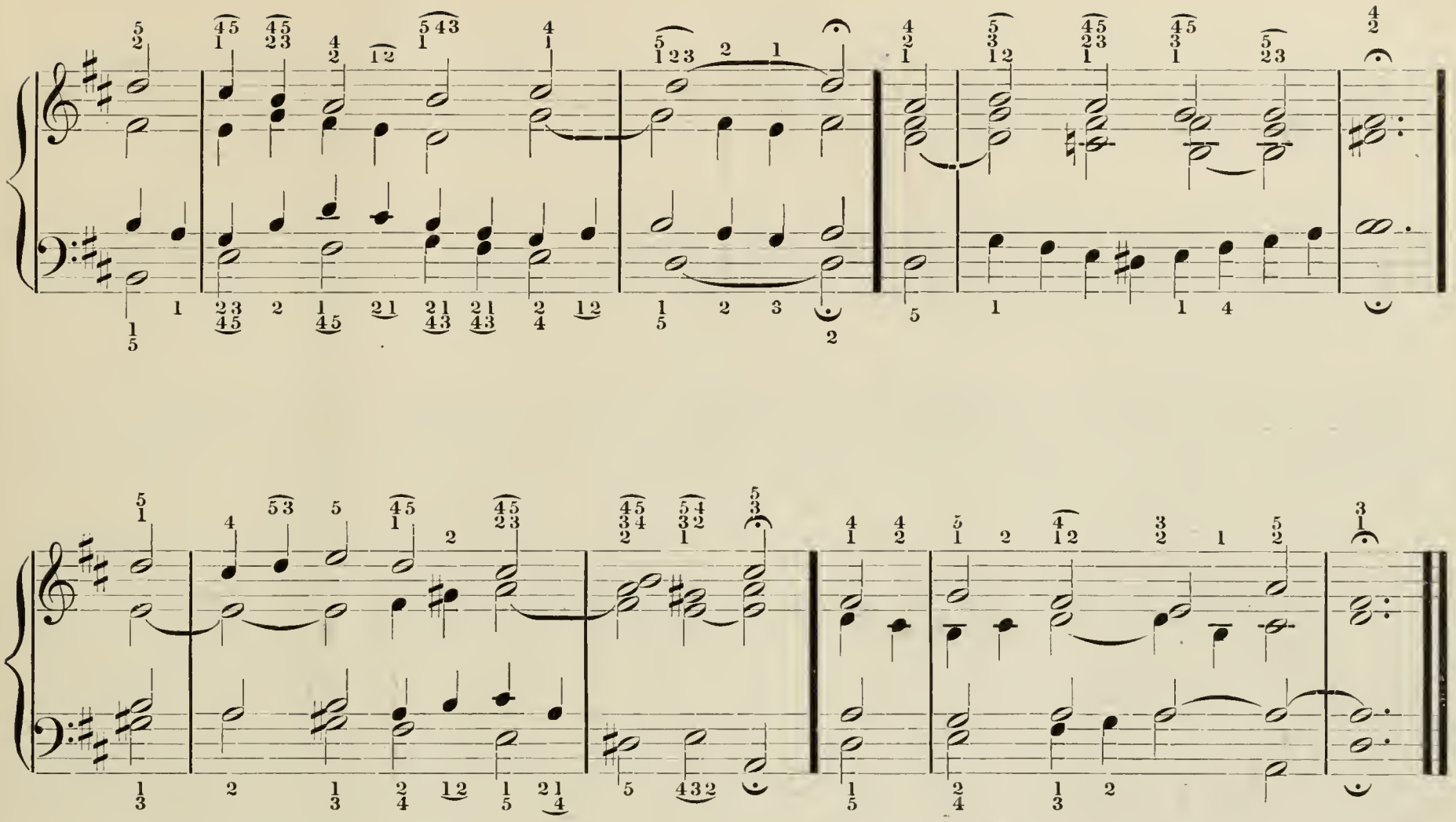
Hans Leo Hassler (1601).
Harmonized by J. S. Bach.

116.

Slow.

Manuals.

Without Ped.



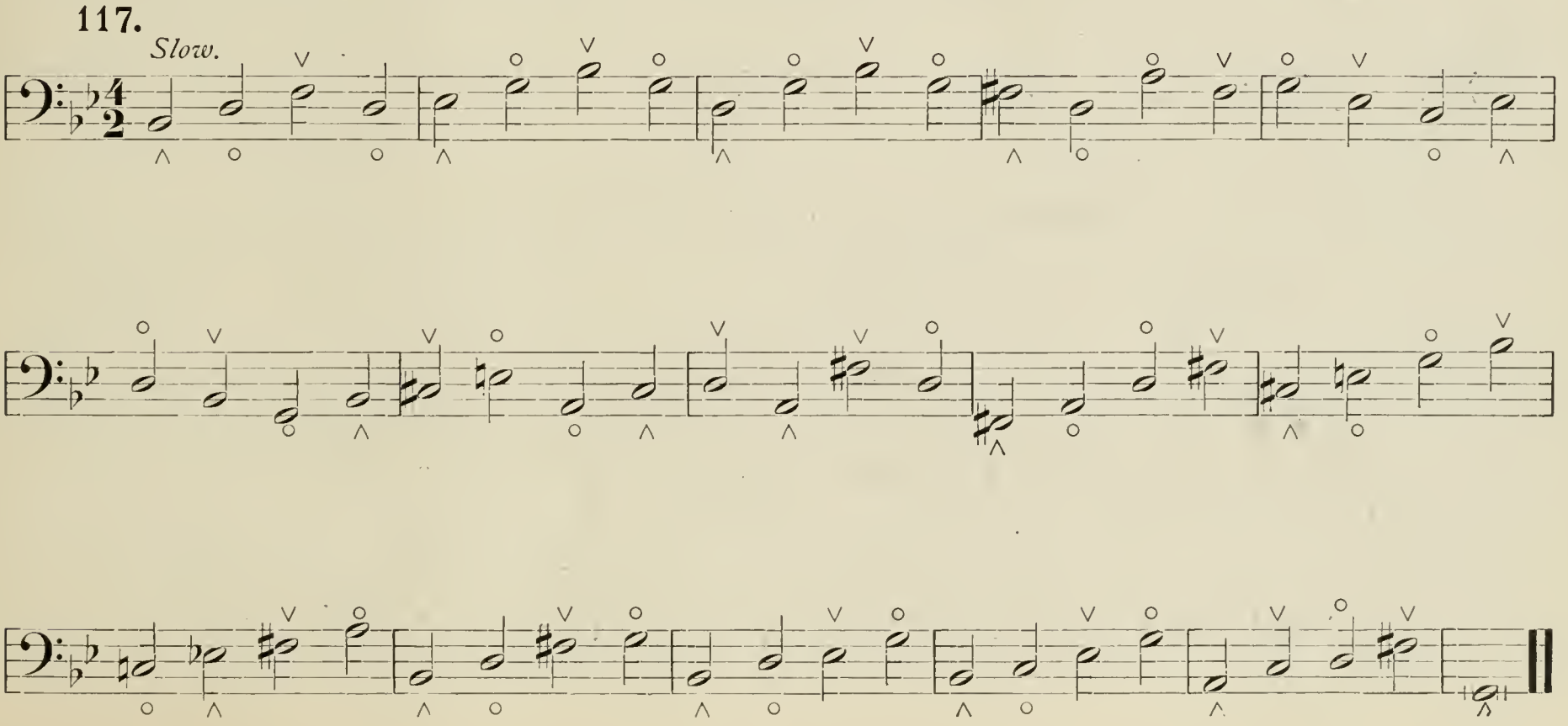
The student should, under his master's direction, arrange the above tune according to the two other methods before described. Pupils having very small hands will find this style of music very difficult, whereas those having hands more than usually large may for themselves devise fingering of an easier kind.

Extended Passages for the Feet.

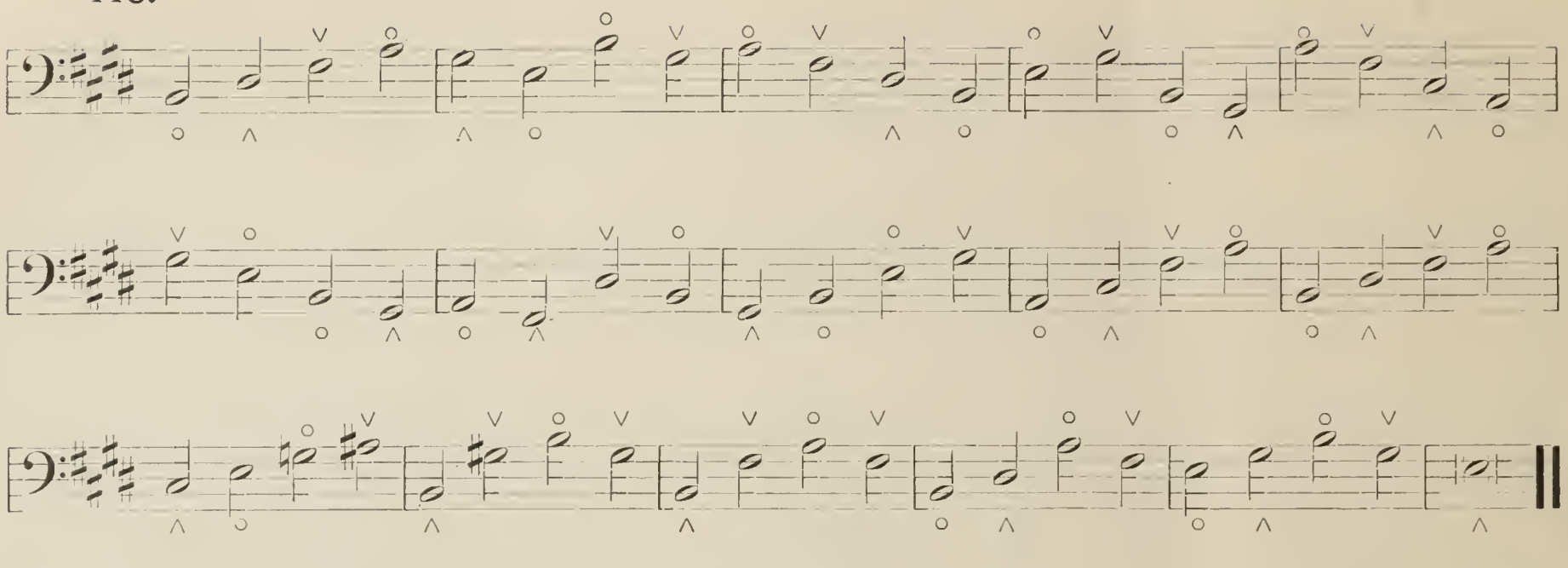
The student may have noticed that, in pedalling, the interval of a third is often taken by one foot ; this is specially useful when one of the keys is a sharp or flat. He is strongly advised to make himself familiar with this system by carefully practising the following exercises :

117.

Slow.

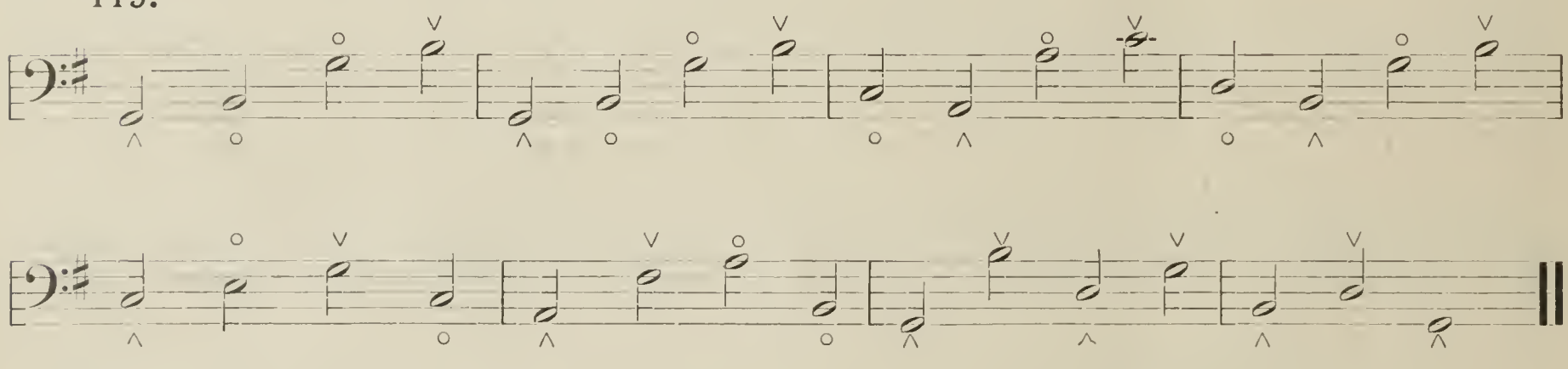


118.



In playing the interval of a third on the natural (long) keys with *one* foot, great care must be taken to get the hollow of the foot exactly over the intermediate pedal, otherwise it will be made to speak either by the toe or heel. The foot must be placed rather sideways.

119.



Expression.

The organ may be said to be deficient, as an instrument, in two respects; the player cannot vary his tone by the character or force of his touch (as on the pianoforte), nor can he glide from one note to another (as on the violin).

It is evident, therefore, that the organist who wishes to play with a proper expression of feeling is chiefly dependent on

(1) The art of phrasing.
(2) The contrast between the *legato* and *staccato* styles.
(3) The use of the Swell pedal.
(4) The selection of stops.

The first and second of these sources of expression are but rarely mastered; they may, indeed, be looked upon as a test of the *musicianship* of an organist.

To phrase properly a player must possess not only knowledge, but taste; the intentions and meaning of a composer must first be duly appreciated intellectually, and then practically brought out, care always being taken to avoid on the one hand a *weak* performance caused by an insufficiently broad *outline*, and on the other hand an *exaggerated* reading caused by bringing the peculiarities of the composer (or the composer and player mixed) into undue prominence. In the former case the attentive hearer traces too little of the spirit of the author; in the latter, too much of the egotism of the player.

In pianoforte music, until quite recent times, very few indications of phrasing and other delicate forms of expression were to be found; and although modern composers have striven to remedy this defect, much still depends on the knowledge and taste of the performer. A comparison between one of Handel's "Suites" and any pianoforte piece by Schumann or Chopin will show the progress made in this direction.

In organ music no corresponding progress can be traced, composers and "arrangers" frequently making the great mistake of giving numerous lists of registers, or indicating combinations of stops, the effect of which varies widely in different instruments.

Much therefore has to be attained by an organist besides merely mechanical skill with fingers and feet, or agility in handling the knobs of stops.

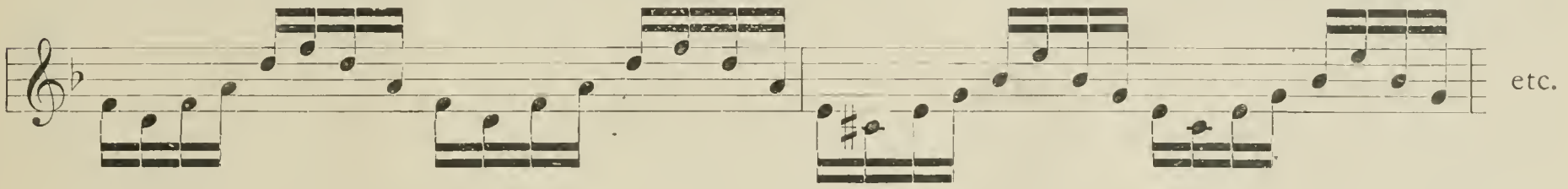
In slow movements of an expressive character it is of the utmost importance that the student should aim at something higher than correctness. It will be found that the Swell pedal (if rightly treated) will add largely to the power of phrasing when used in conjunction with the other modes of expression above enumerated; but, on the other hand, the wisest efforts of the fingers to "round a sentence" will be completely frustrated by carelessness in this respect.

In playing fugues or other pieces not calling forth the minuter details of expression, care must be taken that the general rendering is broad and dignified. The grandeur or beauty of a fugue consists in the fact that it is constructed so as to be of constantly increasing interest from beginning to end. Several important considerations present themselves if this be borne in mind. First, the full power of the instrument should be judiciously reserved for the climax (probably the *stretto*); and although the enunciation of the subject should not be soft or weak, enough power should be kept in hand to enable the player to add to the strength of tone from time to time. It need hardly be pointed out that nothing but a most vicious taste could suggest the giving out of a fugue-subject on a *Tuba mirabilis* or any other "fancy" stop.

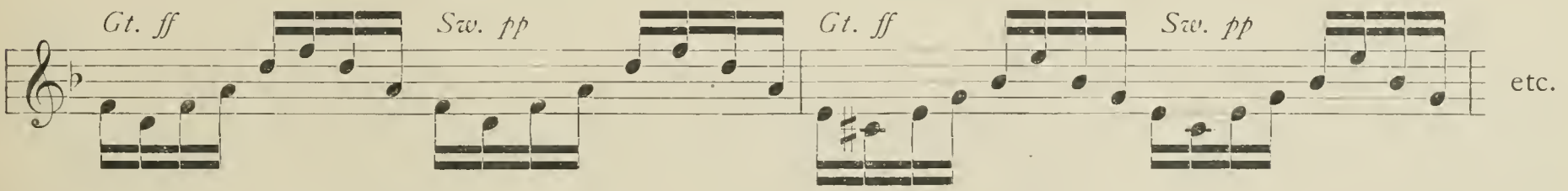
Next, it is certain that if the interest of a fugue is to go on increasing, the *episodes* (those portions of a fugue which do not actually include the working out of the subject) must not be severed from the context by being played on a different manual, or with a strongly contrasted quality of tone. The notion that a fugue is made more interesting by suddenly skipping from the Great Organ in order to play an episode on the Swell Manual (with much pumping), cannot be too strongly condemned. Thus to cut a slice out of the middle of the work completely destroys its unity of purpose. It sometimes may happen that the episodes require even greater power and vigor of style to keep them up to the level of the fugue.

Although these remarks apply to the majority of fugues, the reader is of course aware that there are many others of so calm and melodious a character as to require special treatment — such, for example, as the beautiful "short" Fugue in E minor by Bach. Mendelssohn's Fugue in G major is brought by some organists to a *pianissimo* ending; in this and many other cases the student will have to exercise his judgment.

In classical organ music, passages are often found in which each figure occurs twice, *e. g.*



It is hoped that the student will never be so imaginative as to suppose that the composer intended to represent by this means a series of remarkable *echoes*. His good sense should protest against the following caricature of these passages, although it calls forth rapidity of bodily action:



Enough has been said to prove to the student that his taste and education will mould and stamp their mark on his organ-playing; and any want of refinement will be quickly traced by the best class of hearers, even if he should succeed in making himself an agile gymnast of the first order.

Lastly, in organ-playing, as in every other branch of art, the *object* for which the labor of study is undertaken and persevered in will assuredly influence the result. The performer whose motive is selfish pleasure or a love of laud will drift into a style of playing reflecting his frame of mind; but he who works on with purity of purpose, realizing the nobility of his study, and, better still, desiring to devote his studies to some high aim, will find that he has unknowingly woven a chain which will bind his hearers to him in a bond of mutual sympathy.

CONCLUSION.

The following five short pieces are intended to represent different styles of organ music, and give the pupil a wider sphere of practice while his teacher is selecting a course of organ pieces for him from the works of the best authors.

In No. 120 (Allegretto in F) he will find opportunities of phrasing and using the Swell pedal with good effect.

In No. 121 (Andante in A) he will, in addition to the above, be able to practise the playing of a melody with the left hand while the right has a free accompaniment.

In No. 122 (Fantasia in E minor) are *staccato* chords which must be played freely from the wrist, *and wrist only*, all the fingers being taken off the keys precisely together; it also contains passages which must be passed from one hand to the other without any break or inequality.

In No. 123 (Adagio in E flat) he will find more scope for management of stops, etc., than in the preceding movements.

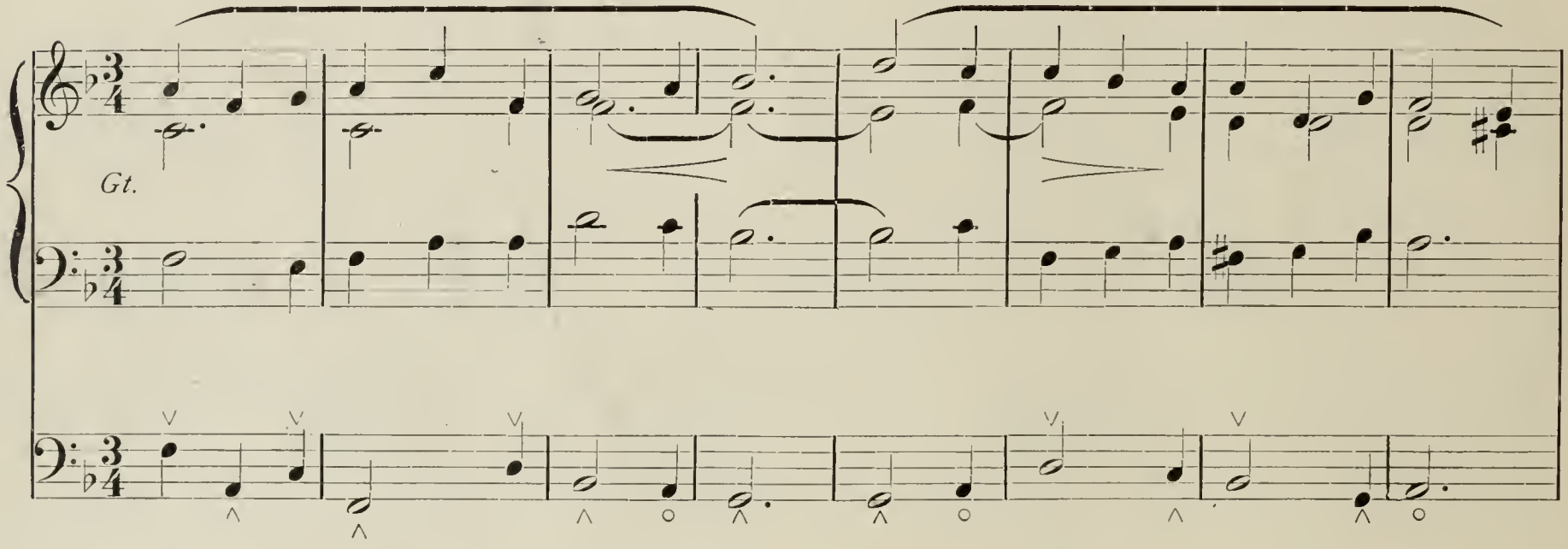
In No. 124 (Prelude and Fughetta) he will find that rapid changes of fingers are necessary in order to obtain a true *legato*. In the *Coda* (*presto*) it is of importance that the hands should be so mutually supporting and equally balanced as to make it sound as if one hand only were used. As is usual in passages of this kind, the stems of notes to be played with the right hand are turned up; those to be played with the left, down.

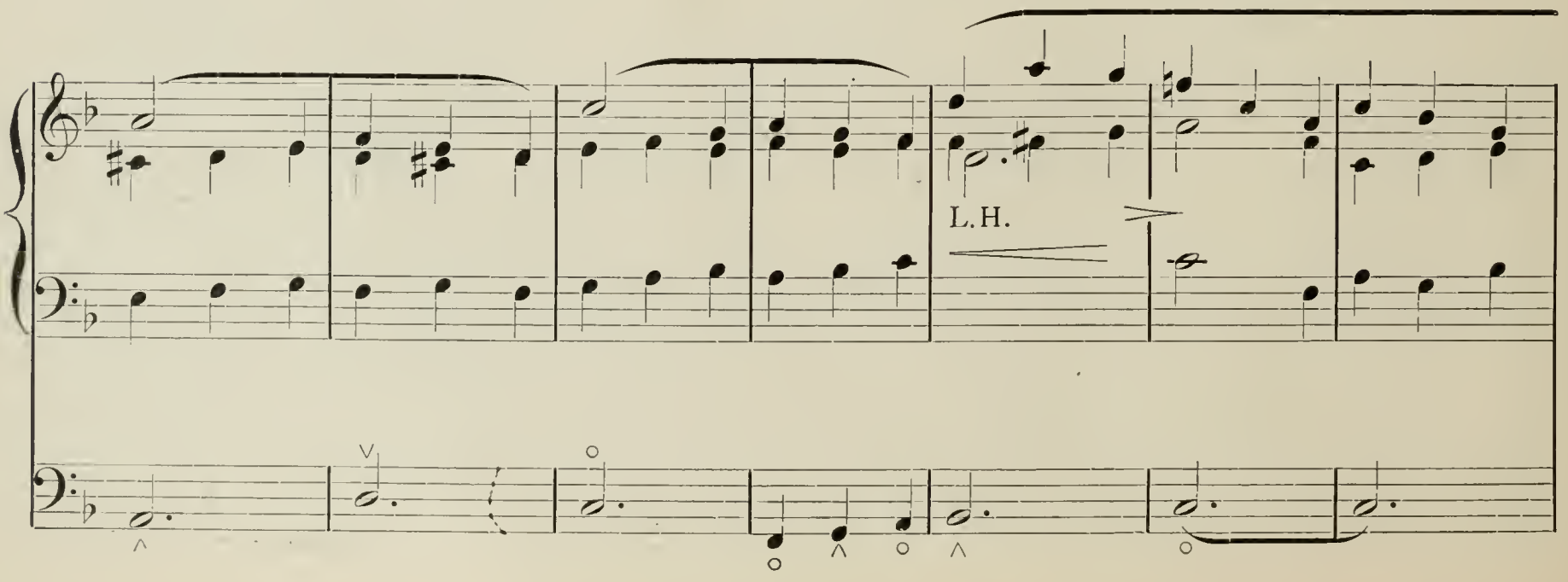
Allegretto.

120.

Gt. Open Diap. 8′.
Sw. Diaps. 8′, Oboe 8′, Coup. to Gt.
Ped. Bourdon 16′, Flute 8′.
Gt. to Ped.

J. Stainer.





Sw.

Sw.

Gt. to Ped. off.

rall.

a tempo.

Gt.

Gt.

Gt. to Ped.

cres.

L. H.

Sw.

Sw.

Gt. to Ped. off.

Reduce to Voix Célestes.

pp

121. Andante.

Gt. Melodia 8′
Sw. Diapasons 8′, coup. to Gt.
Ch. Lieblich Gedackt, & Dulc. 8′
Ped. Bourdon 16′, Flute 8′. — Gt. to Ped.

(See Note on page 90.)

J. Stainer.

Gt.

L.H.

Sw.

Sw.

Gt. to Ped. off.

Ch.

Sw.

Add Oboe.

Oboe off

Gt.

Coup. to Sw.

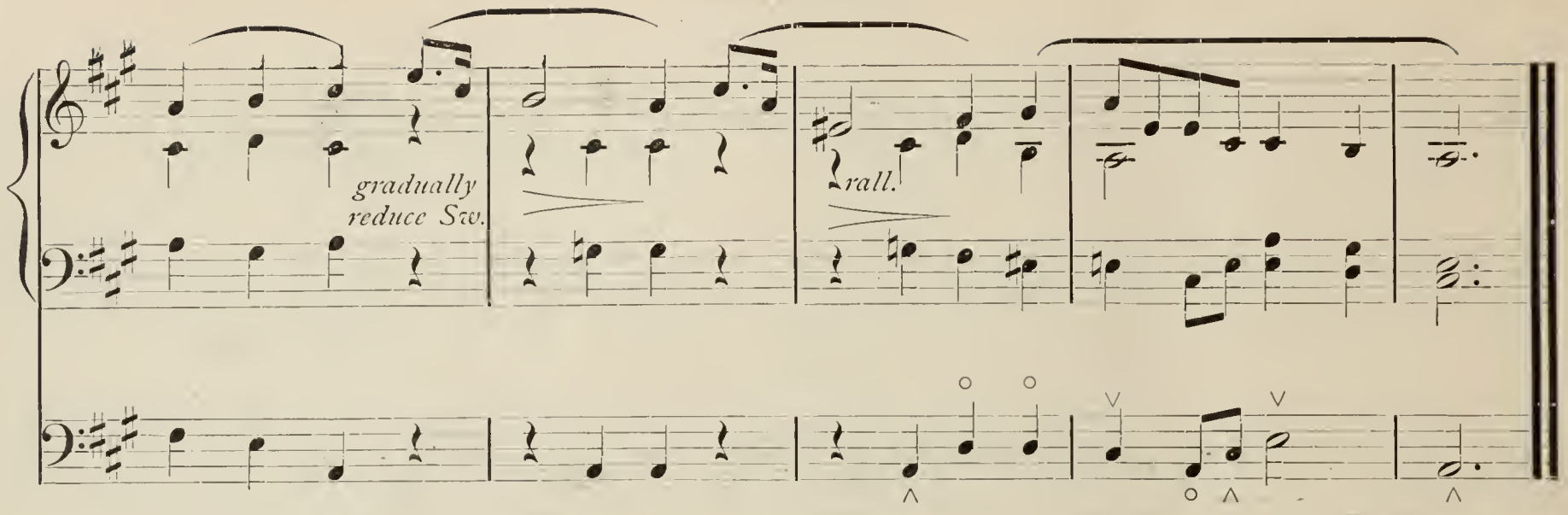
L. H.
cres.

dim.

p Sw.

Sw.

L. H.

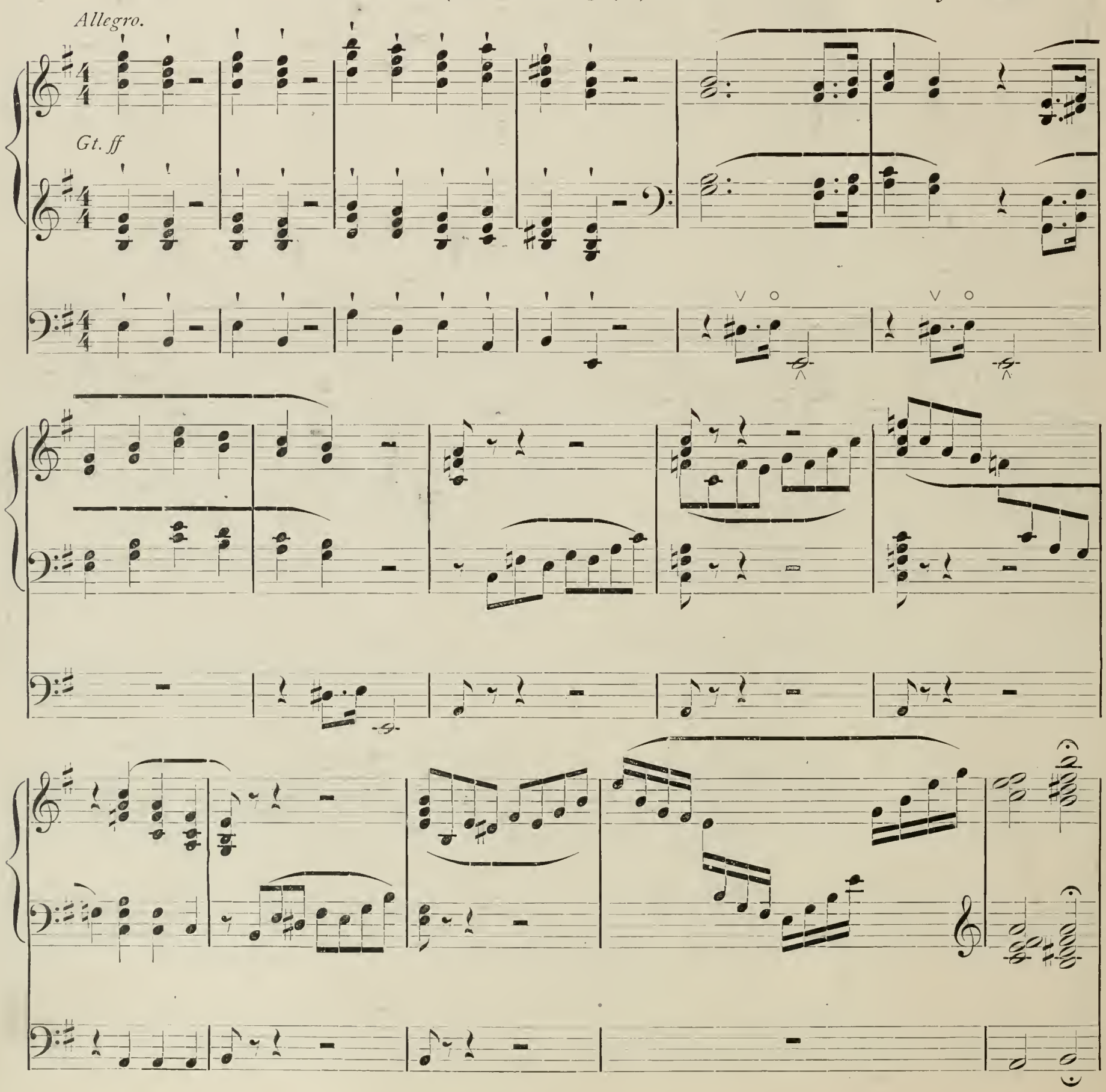


122. Fantasia.

Gt. Full. Sw. Full, coup. to Gt. Ped. Full, coup. to Gt.

(See Note on page 90.)

J. Stainer.



*Andante.**

Reduce Gt. and Sw. rall.

Gt. | Diapason 8'.

L.H.

* In five-measure rhythm.

rall.

Allegro

ff Gt. Full.

ff

legato.

123. Adagio.

Gt. Melodia 8′. Sw. Diapasons 8′, Sw. to Gt.
Ped. Bourdon 16′, coup. to Sw. (See Note on page 90.)

J. STAINER.

p Sw.

L.H.

Gt.

Sw.

Gt.

Sw. Oboe.

Gt. Diap. 8.'

L.H.

Gt. to Ped.

dim.

Sw.

L.H.

Gt. to Ped. off.

Sw. add Flute 4'.

rall.

Gt. Gamba 8'.

tr

Gamba off.

Sw.

Gt. Diapason 8'.

Gt. to Ped.

cres.

L.H.

Gt. Melodia only.

dim. *rit.* *a tempo.* *Oboe off. Sw. p* *rall.*

124. Prelude and Fughetta.

Gt. Diapasons 8′, Princ. 4′. Sw. Diapasons and Reeds 8′, Sw. to Gt. Ped. Bourdon, Open Diap. 16′, coup. to Gt.

(See Note on page 90.)

J. Stainer.

Allegro moderato.

f Gt. L.H. L.H. L.H.

tr

I.

L. H.

2.

add Full Sw.

L. H.

rall.

ff Full Organ.

ff

Moderato.

Gt.

R.H.

L.H.

mf *Gt. reduce to Diapasons and Princ. 4'; reduce Swell.*

R.H.

Gt.

L.H.

L.H.

add Full Swell.
cres.

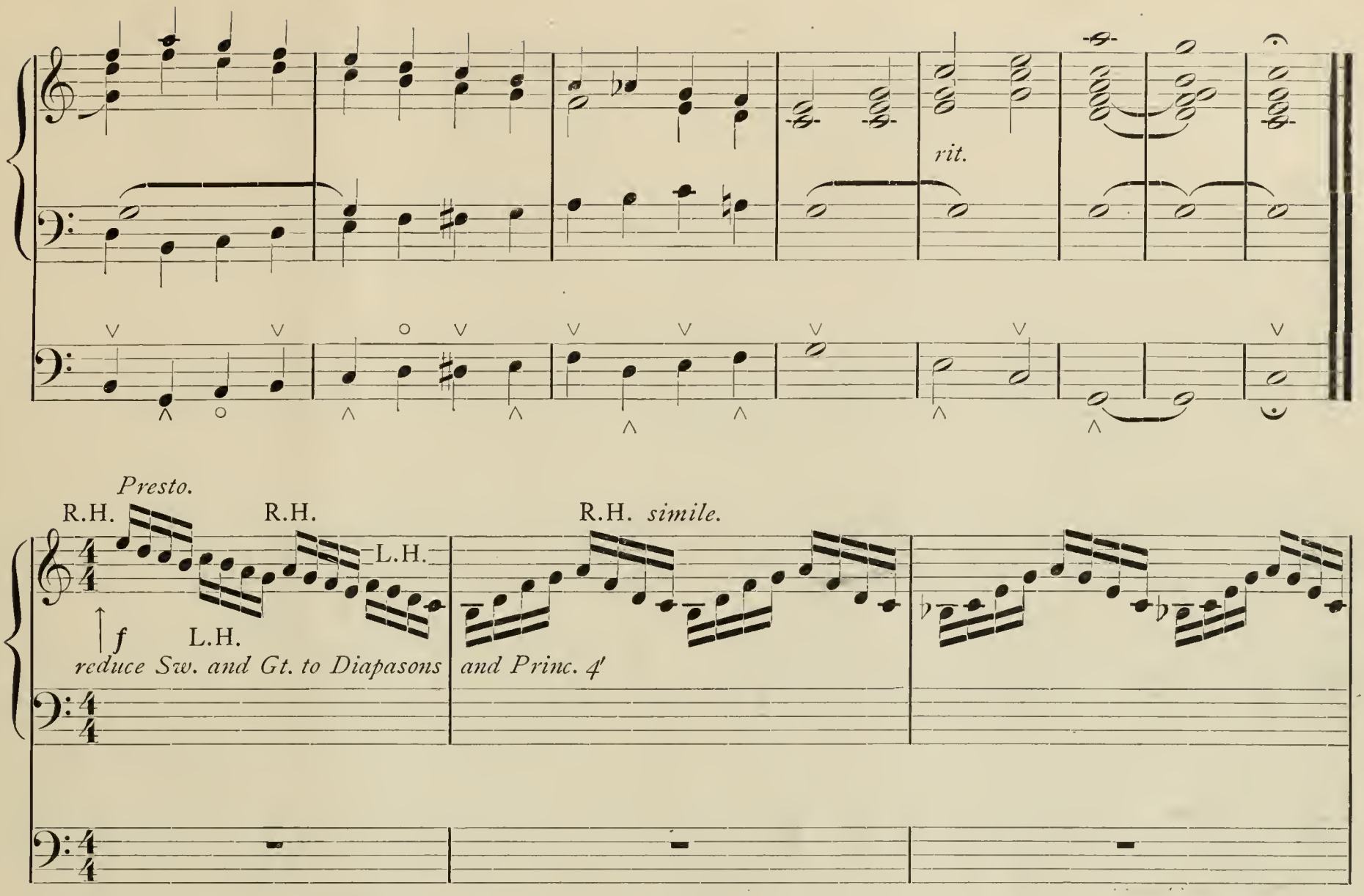
cres.

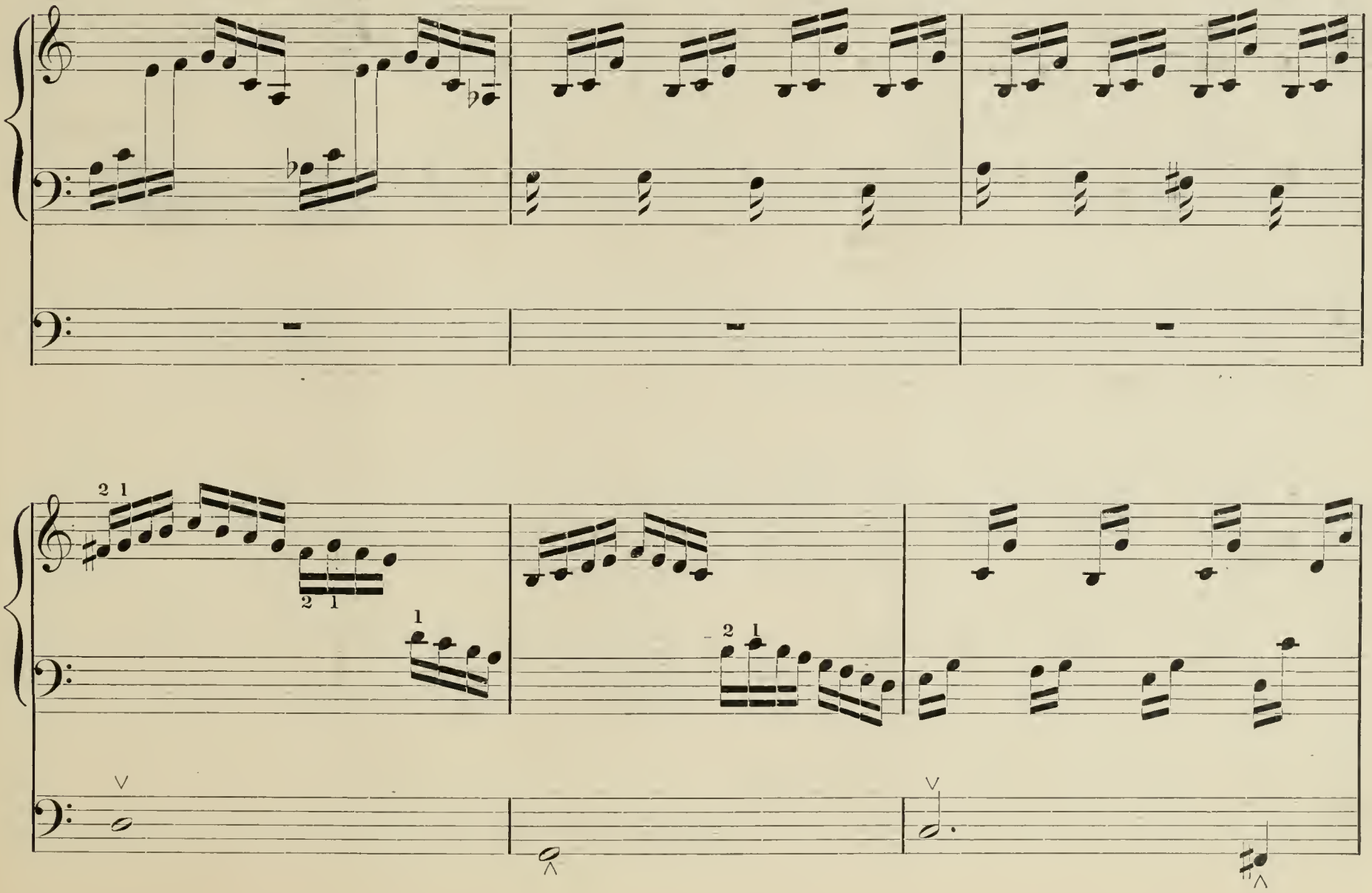
Gt. Reeds 8'.
ff

L.H. *rit.*.

fff Full Organ.

a tempo.


rit.
Presto.
R.H.
R.H.
L.H.
L.H.
f
reduce Sw. and Gt. to Diapasons
R.H. simile.
and Princ. 4'



3 2 1

Add Ped. Trombone.

Gt. Reeds.

Adagio.

ff Full Organ.

L.H.

rit.

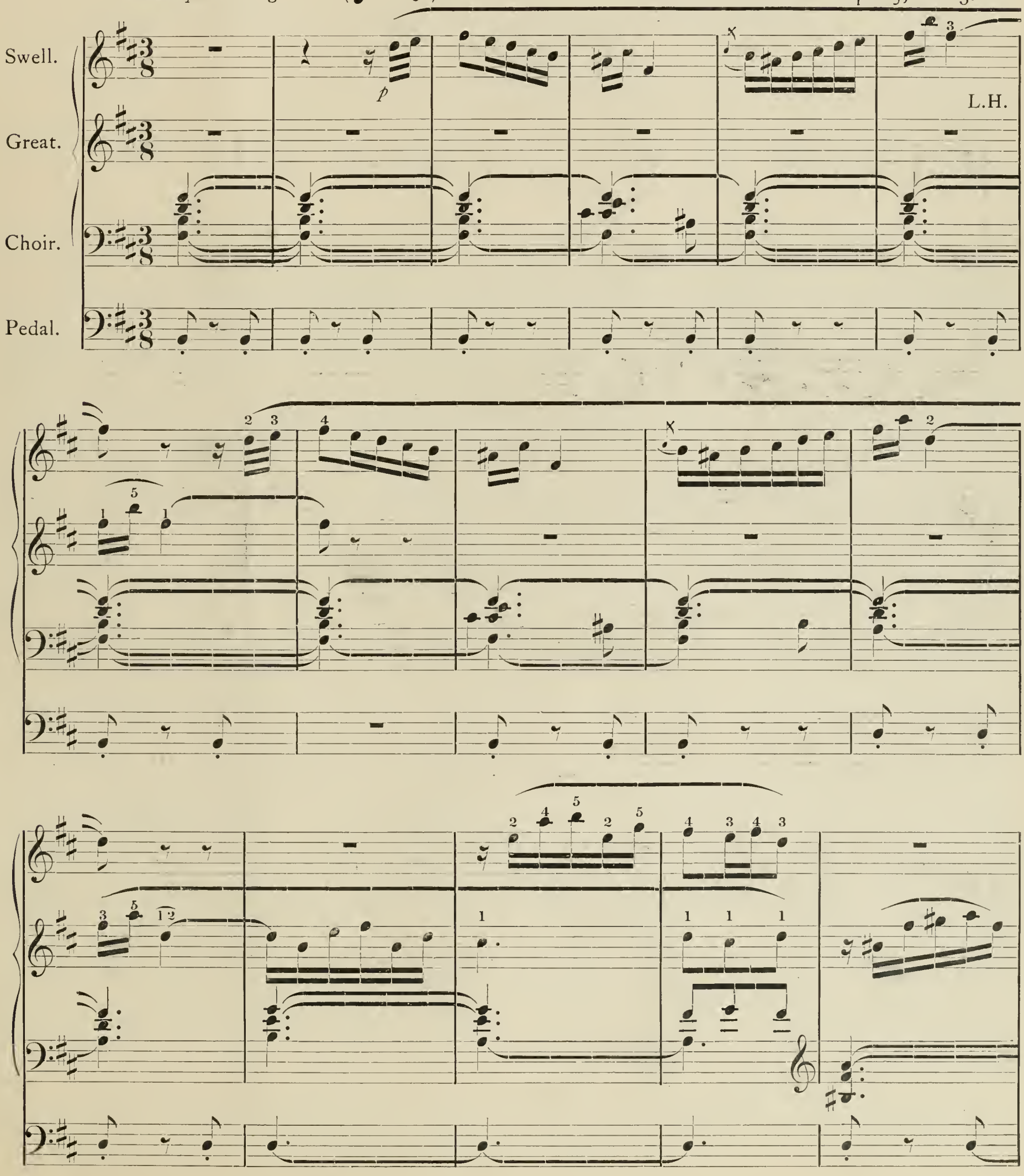
tr

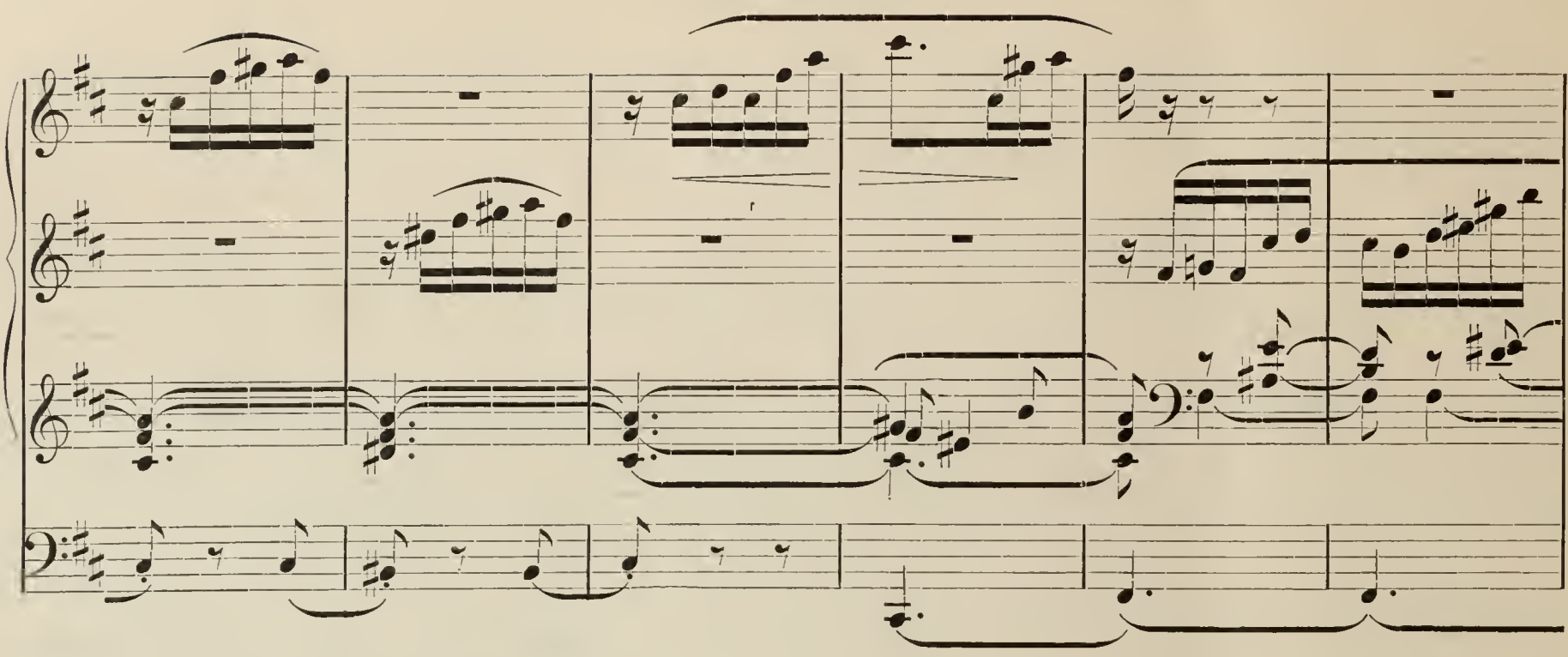
The following piece, Guilmant's *Cantilène pastorale*, illustrates the playing upon two manuals with one hand. Other examples of this style will also be found in Pastorale in E major, Lemare; Andantino in D flat, Lemare; Allegro cantabile (from 5th Symphony), Widor; Berceuse, Kinder.

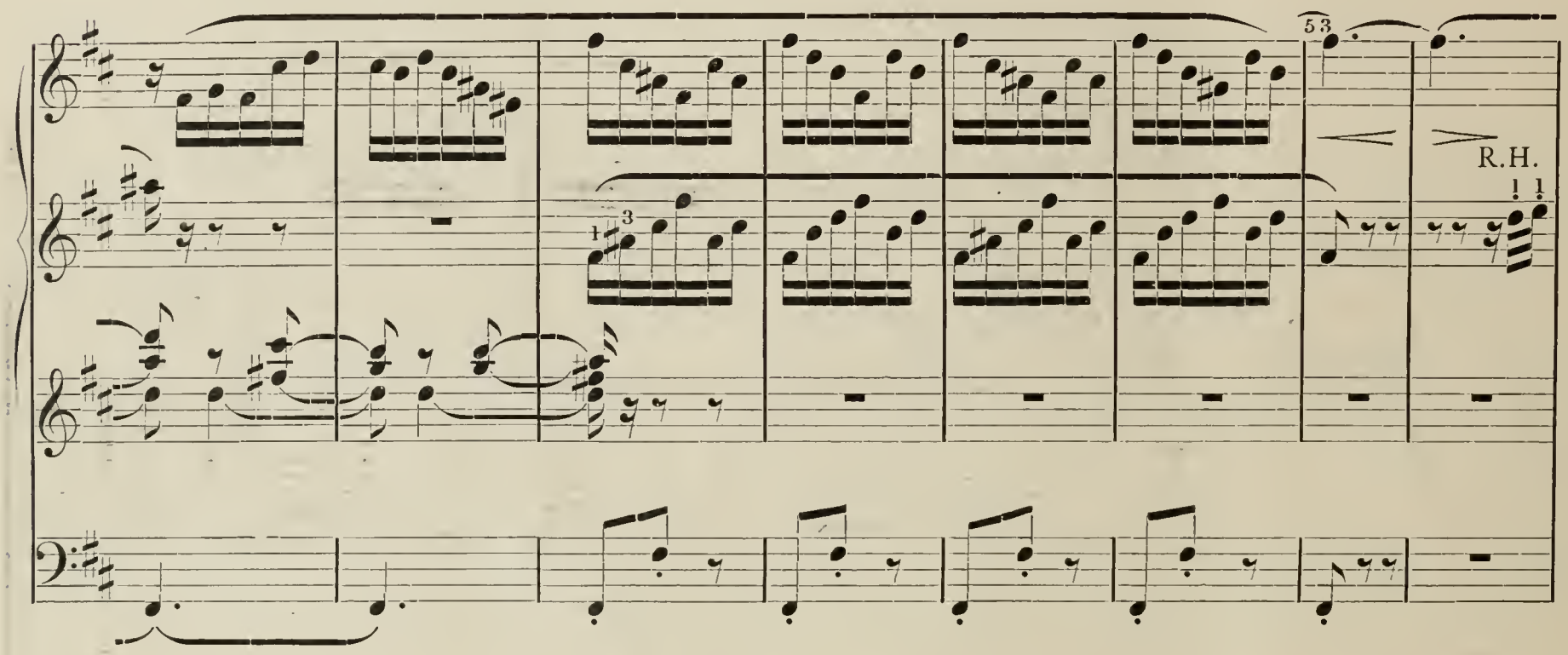
Cantilène Pastorale.

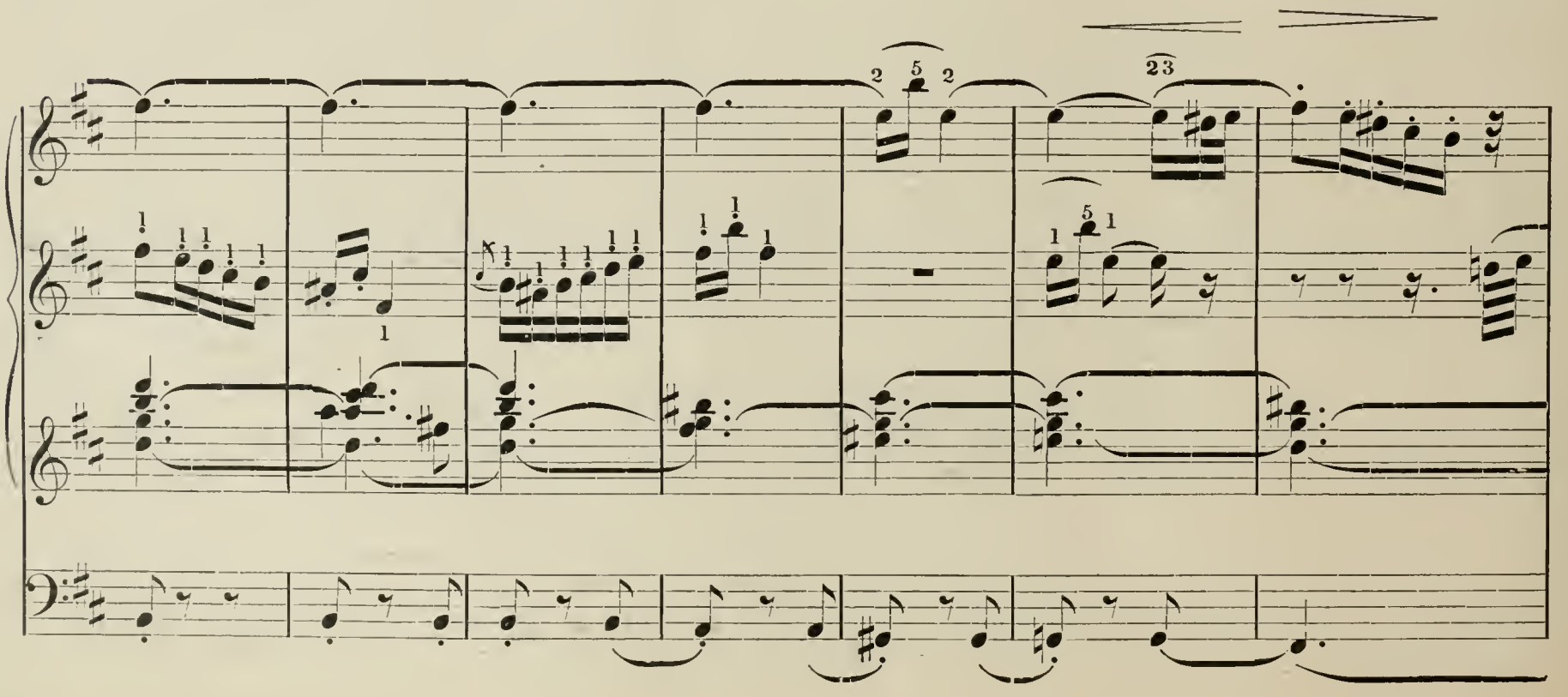
Registration.
- Swell: Oboe with St. Diapason.
- Great: St. Diapason or Flute 8′.
- Choir: Dulciana (Viol da Gamba or Salicional *ad lib.*).
- Pedal: Bourdon 16′, and soft 8′.

Andante quasi Allegretto. (♪ = 138). ALEX. GUILMANT. Op. 15, No. 3.





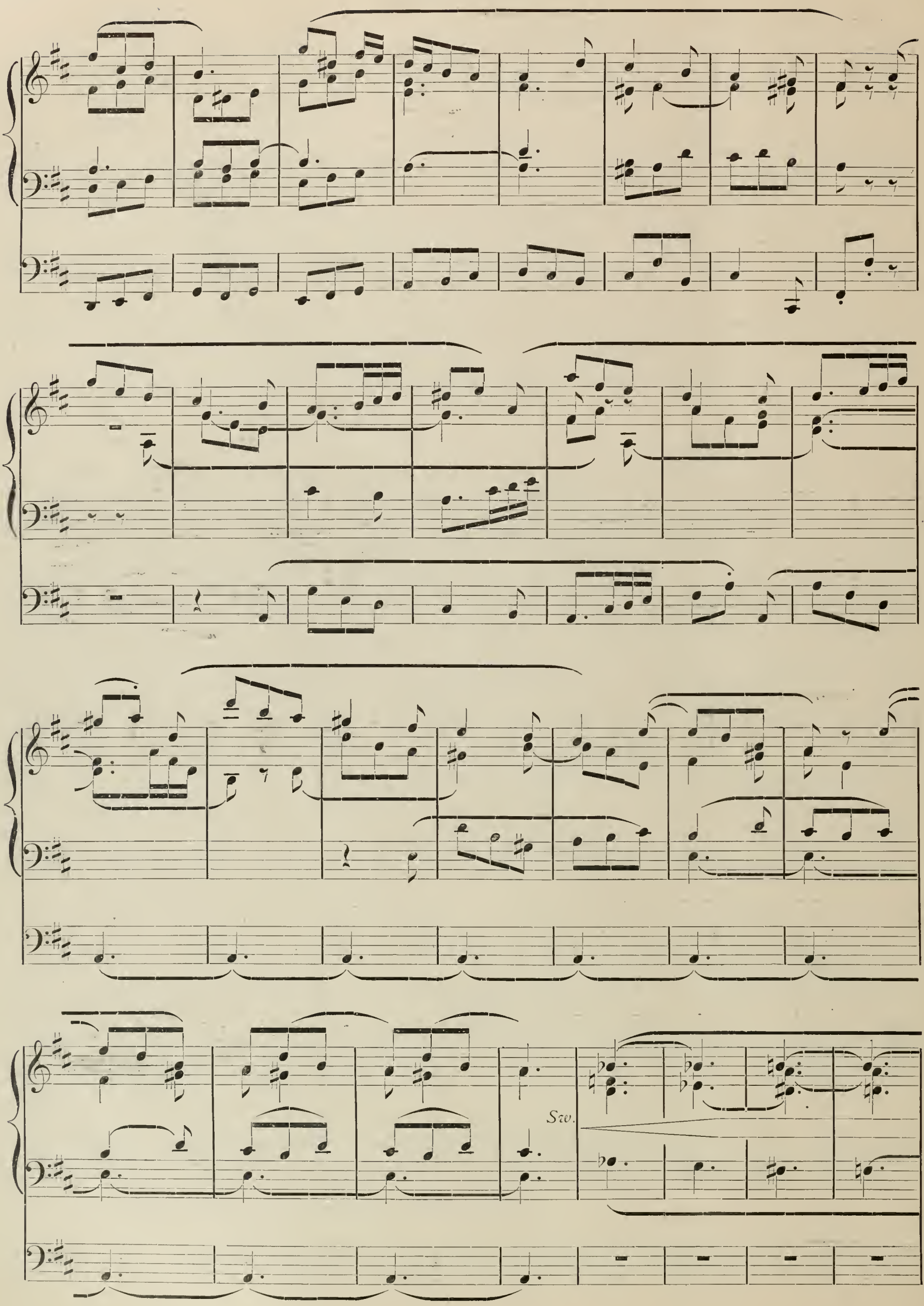

R.H.

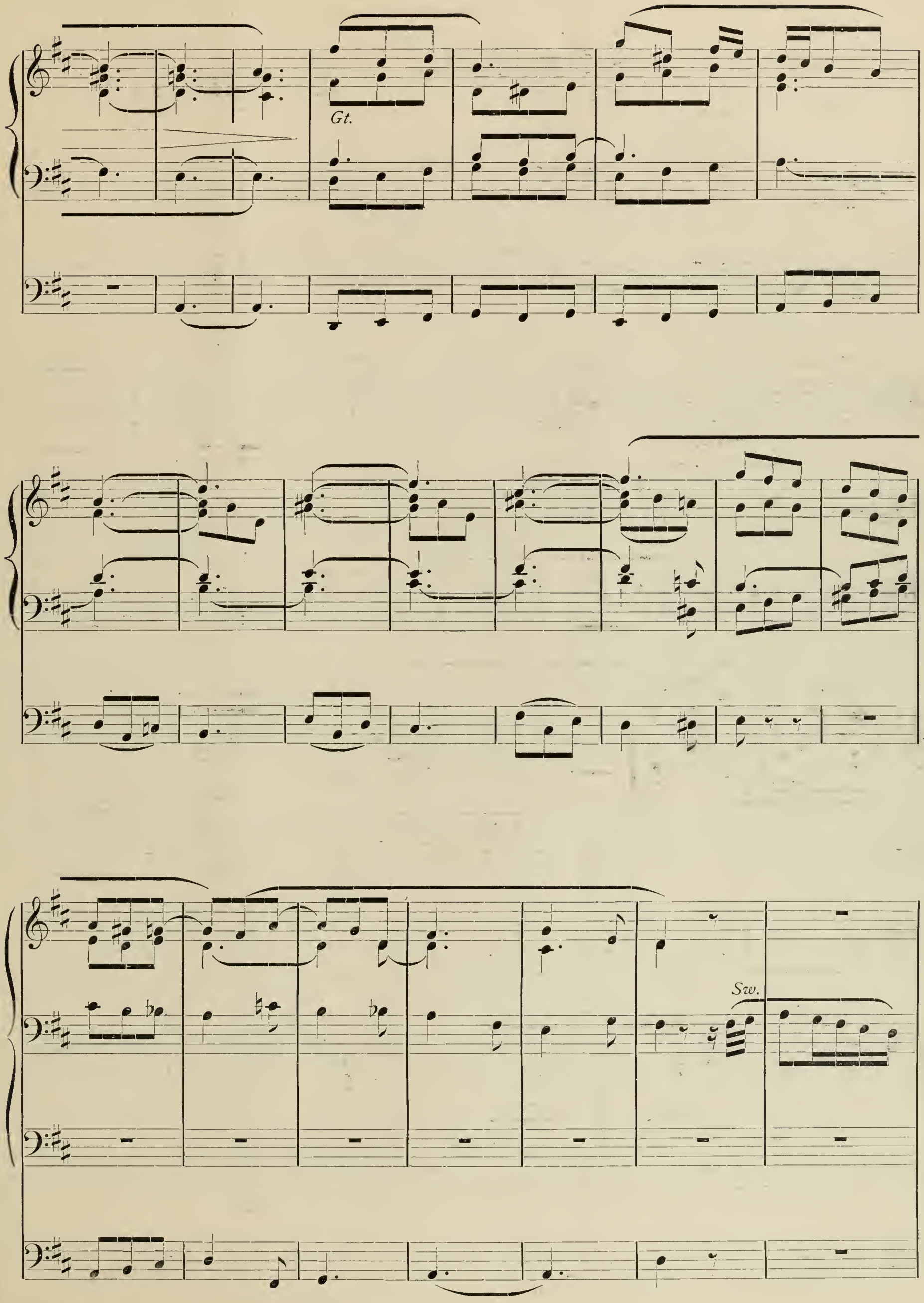


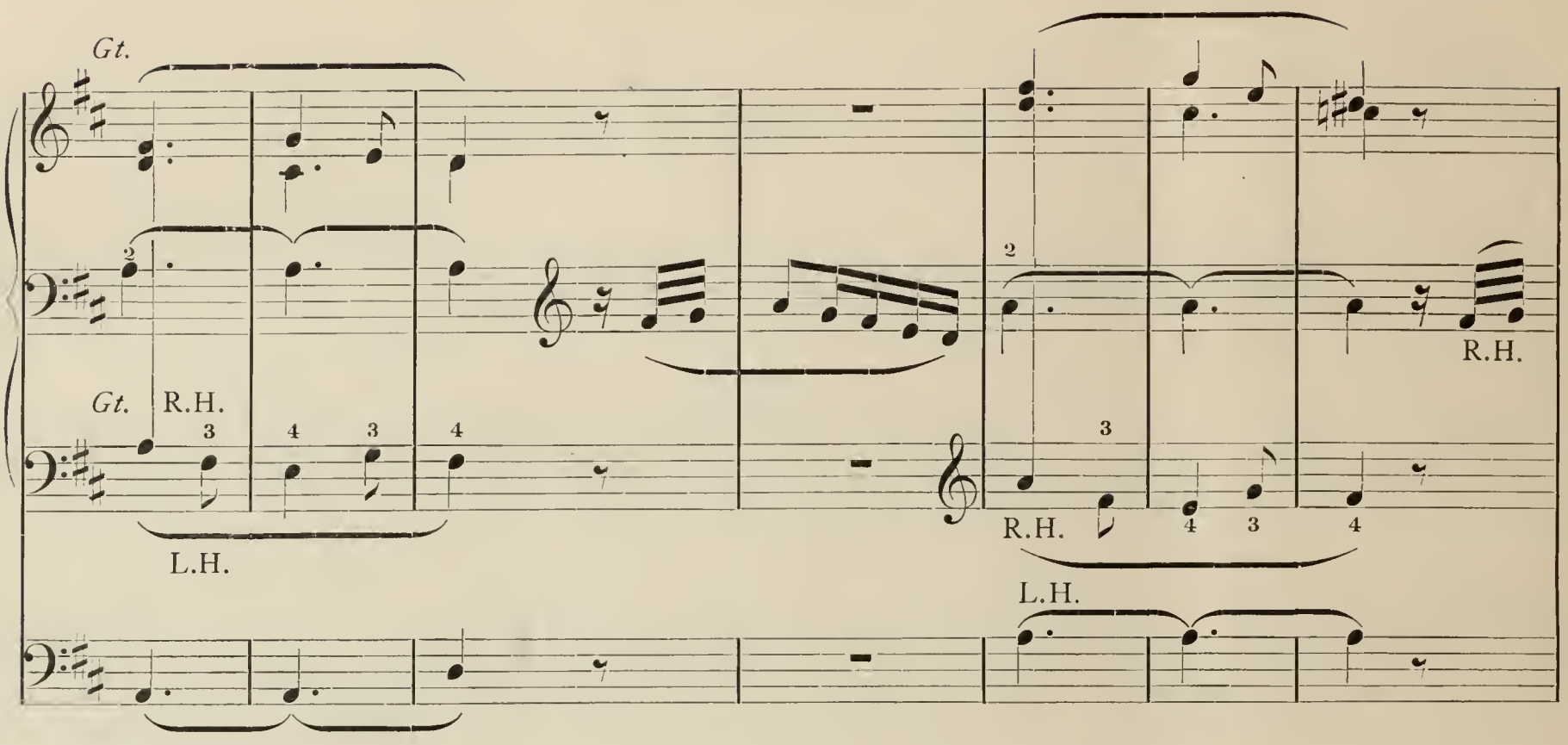
3 2 1

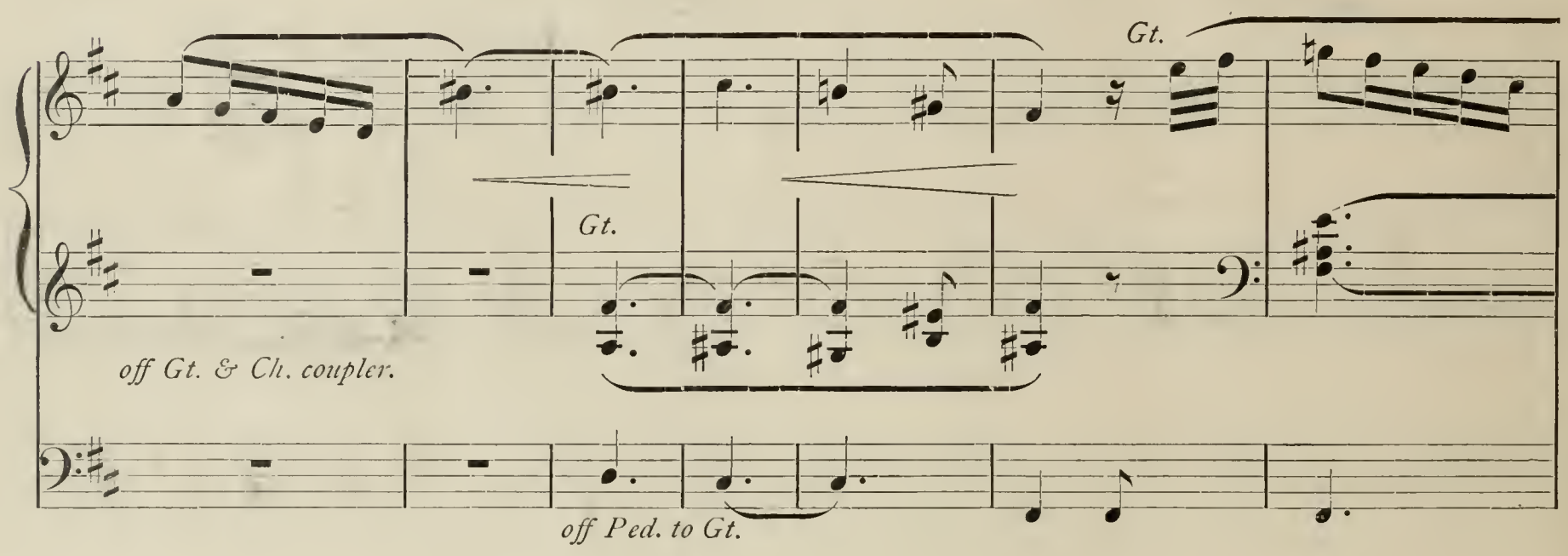
Gt. coupled to Ch. with Flute 4′.

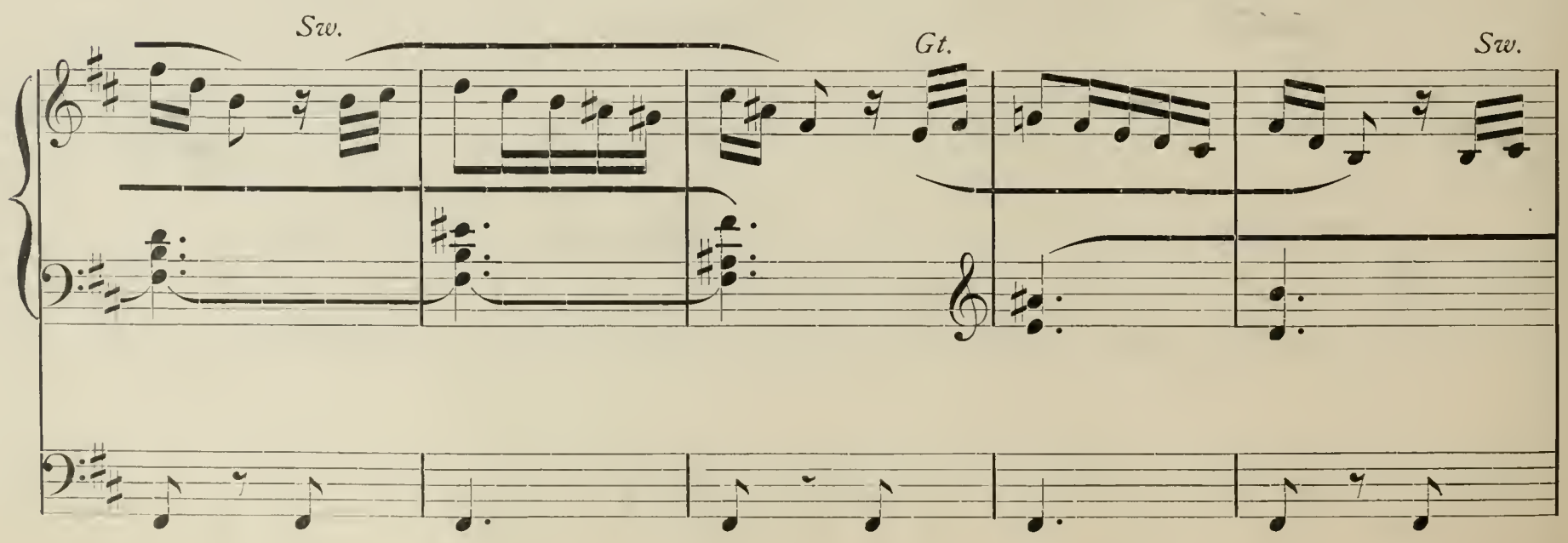
Gt. to Ped.


Sw.


Gt.
Sw.


Gt.
Gt. R.H.
L.H.
R.H.
R.H.
L.H.


Gt.
Gt.
off Gt. & Ch. coupler.
off Ped. to Gt.

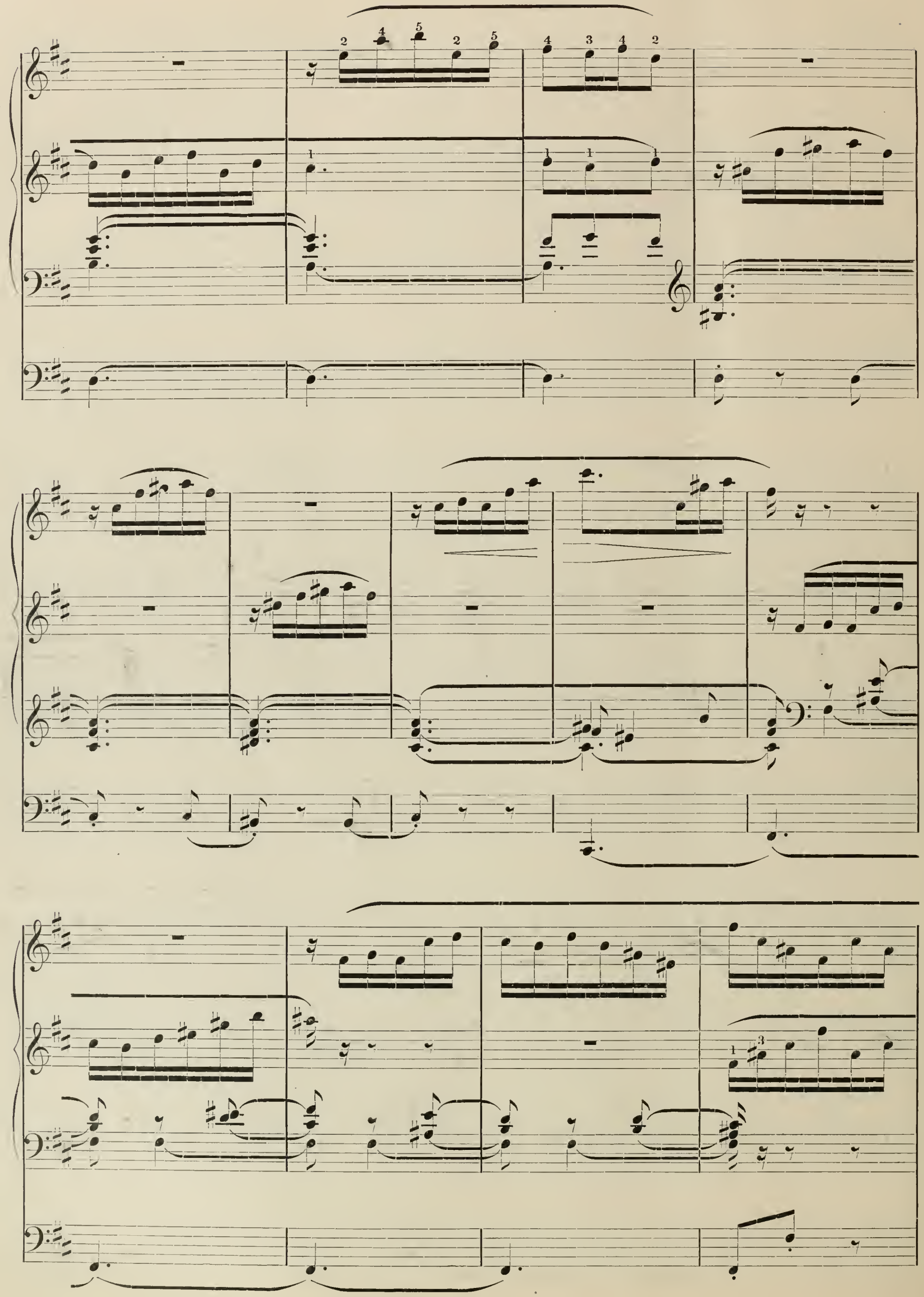

Sw.
Gt.
Sw.

Sw.

Ch. Sw. Gt. 41

Ch.

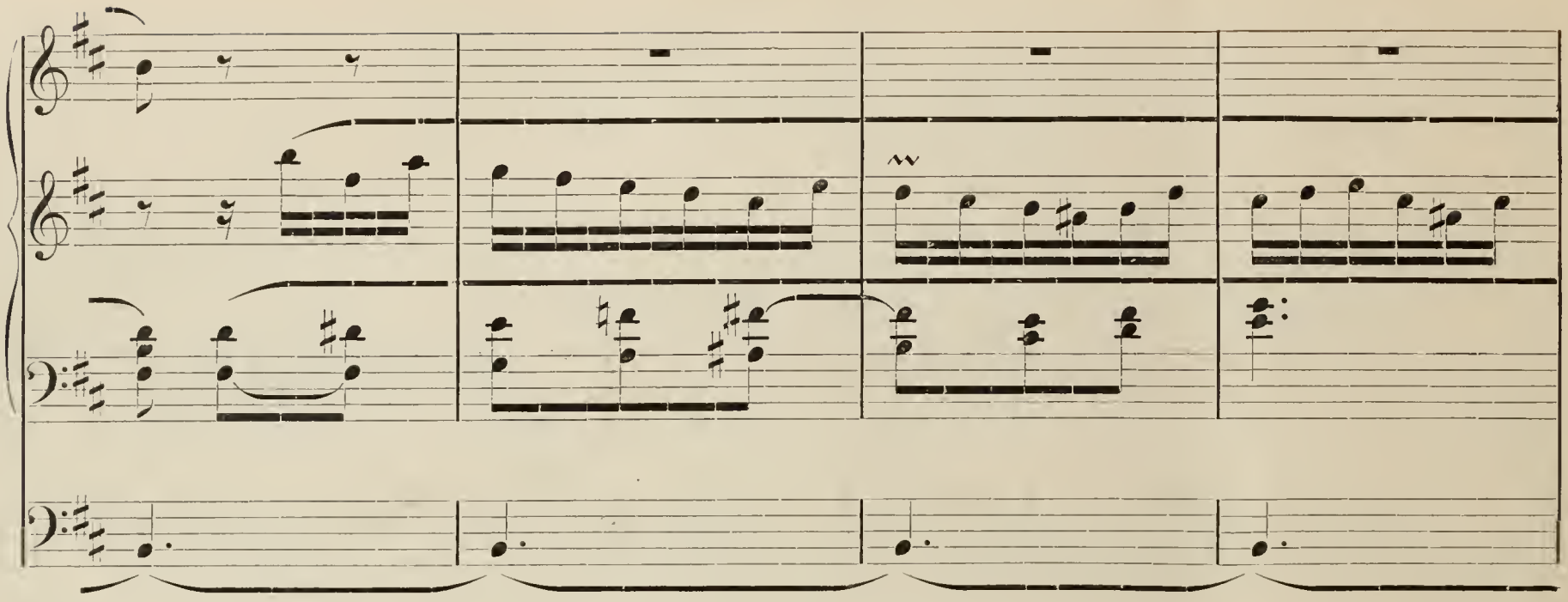
off Fl. 4.'
ad lib.

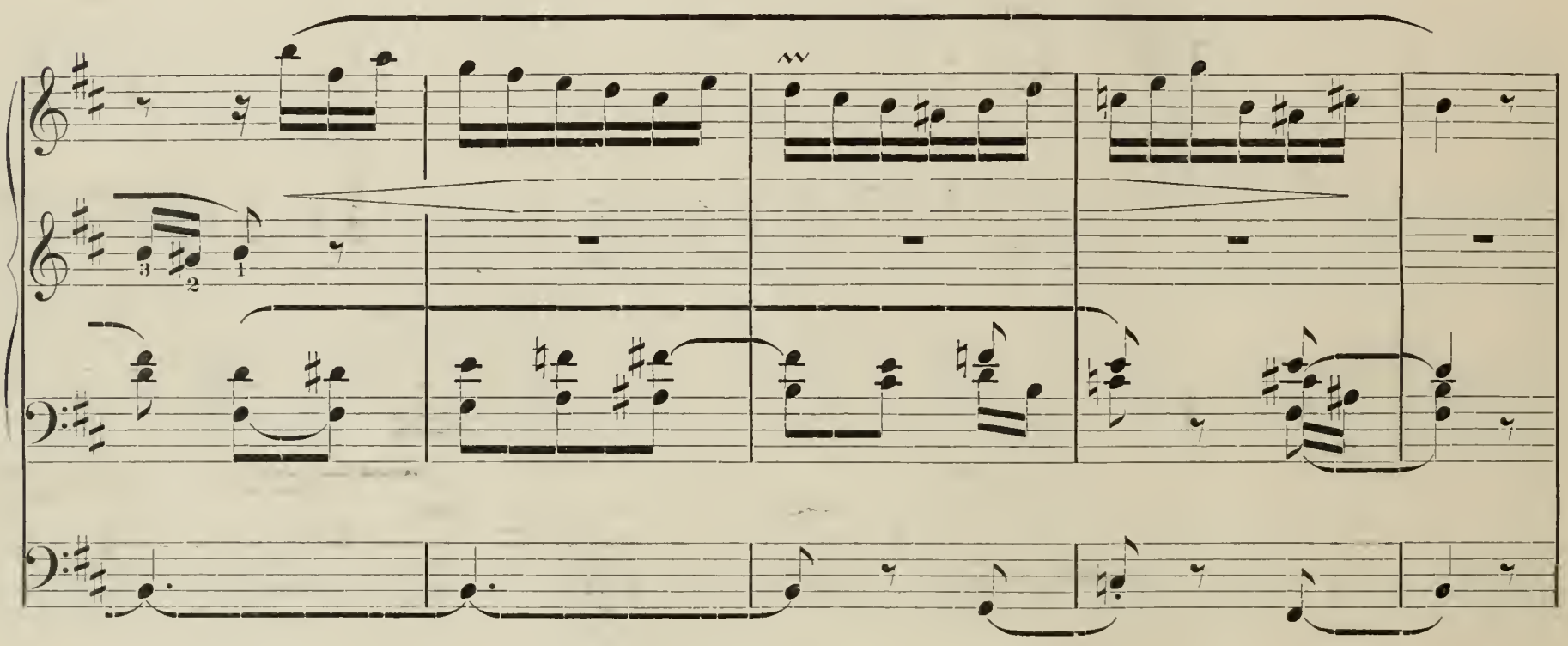


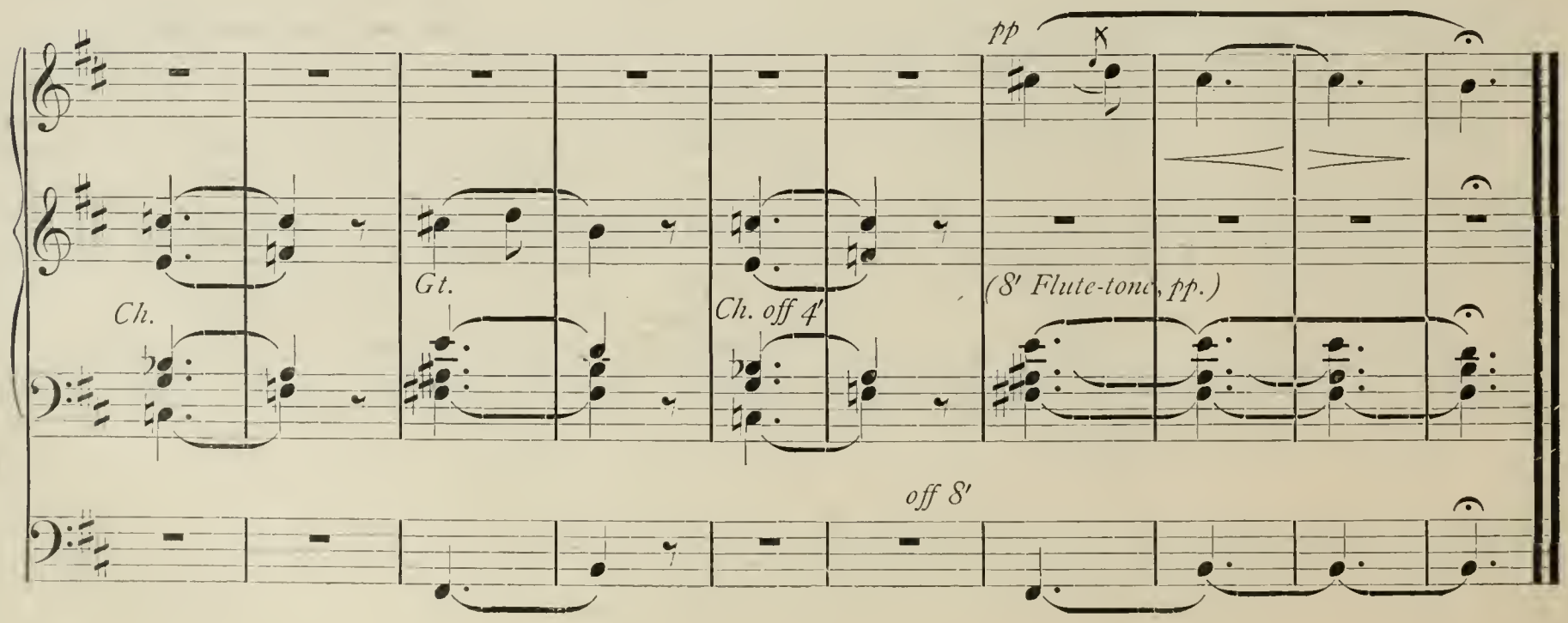
53

R.H.

23




3
2
1

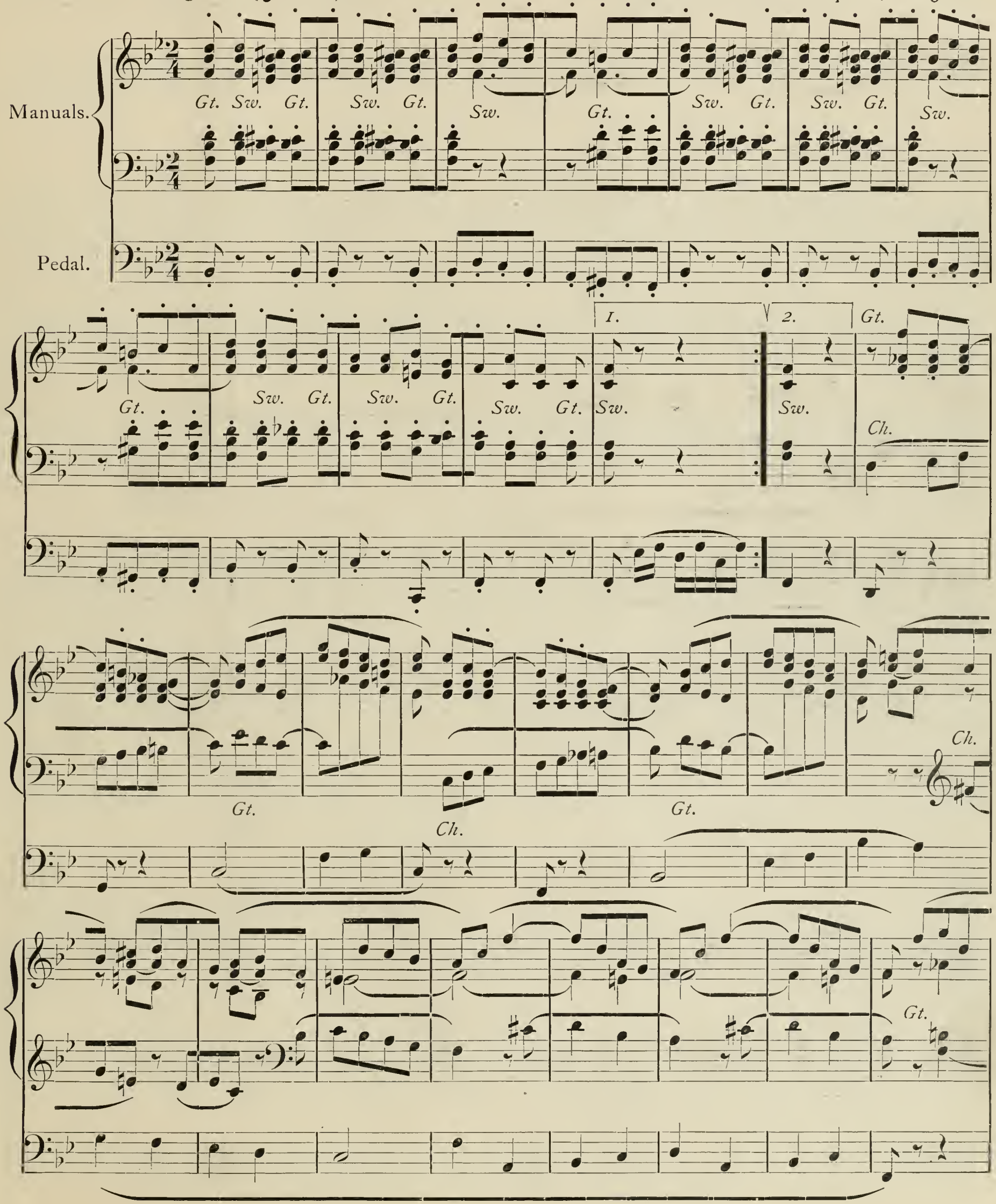

pp
Ch.
Gt.
Ch. off 4′
(8′ Flute-tone, pp.)
off 8′

The following Caprice is one of the best examples in modern organ music illustrating the rapid changing of the hands from one manual to another. Another example will be found in Merkel's Variations on a Theme by Beethoven, Op. 45.

Caprice.

Registration.
- Swell: Bourdon 16′ and Flute 4′.
- Great: Gamba 8′ and St. Diap. or Flute 8′.
- Choir: Diapasons and Harmonic Flute 8′ or 4′.
- Pedal: 16′ and 8′.

Allegretto (♩=104.) ALEX. GUILMANT. Op. 20, No 3.



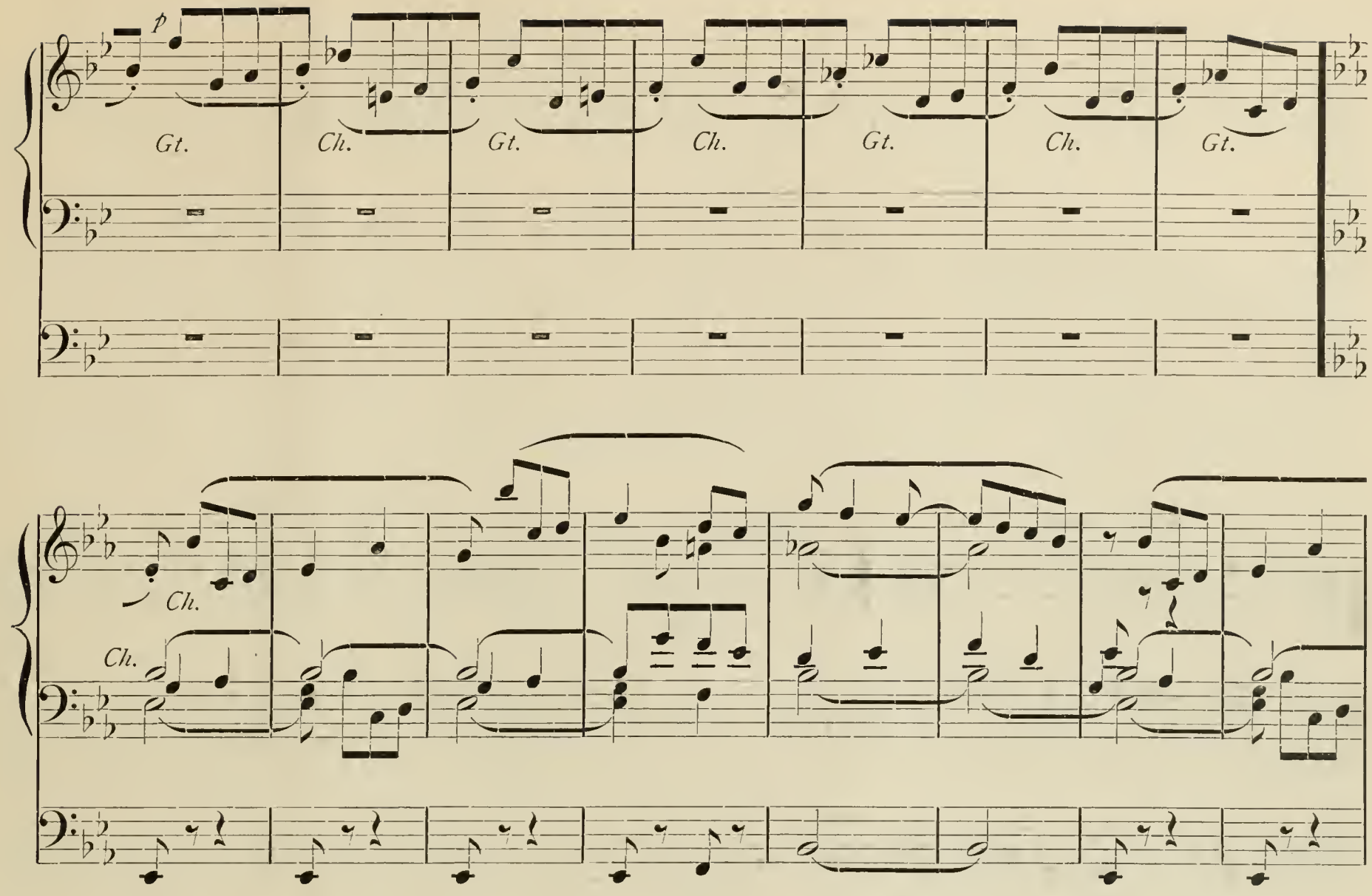
Sw. Gt. Sw. Gt. Sw. Gt.

Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt.

Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt.

Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Ch. off Op. Diap.

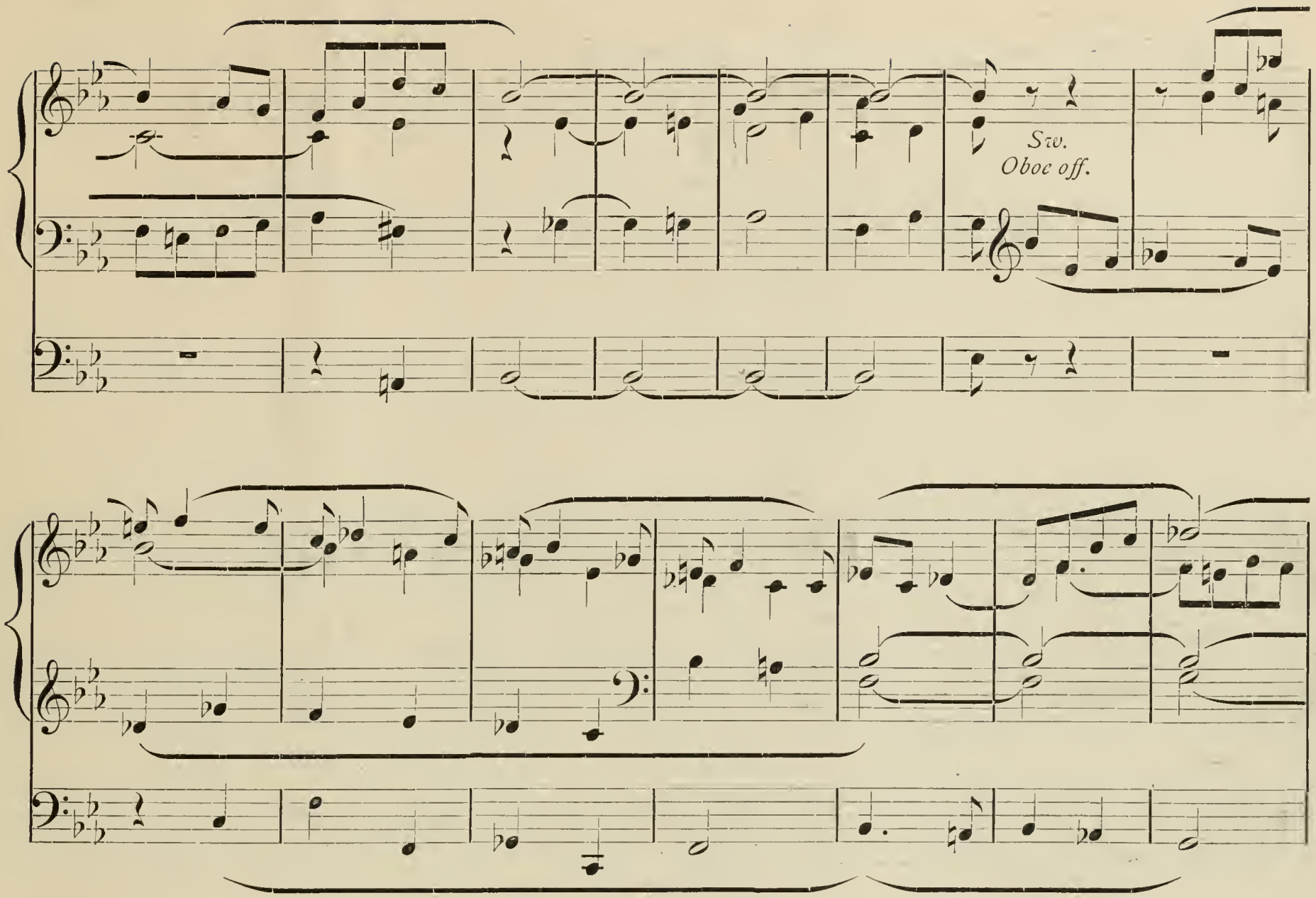
Prepare Sw. Diaps. and Oboe.

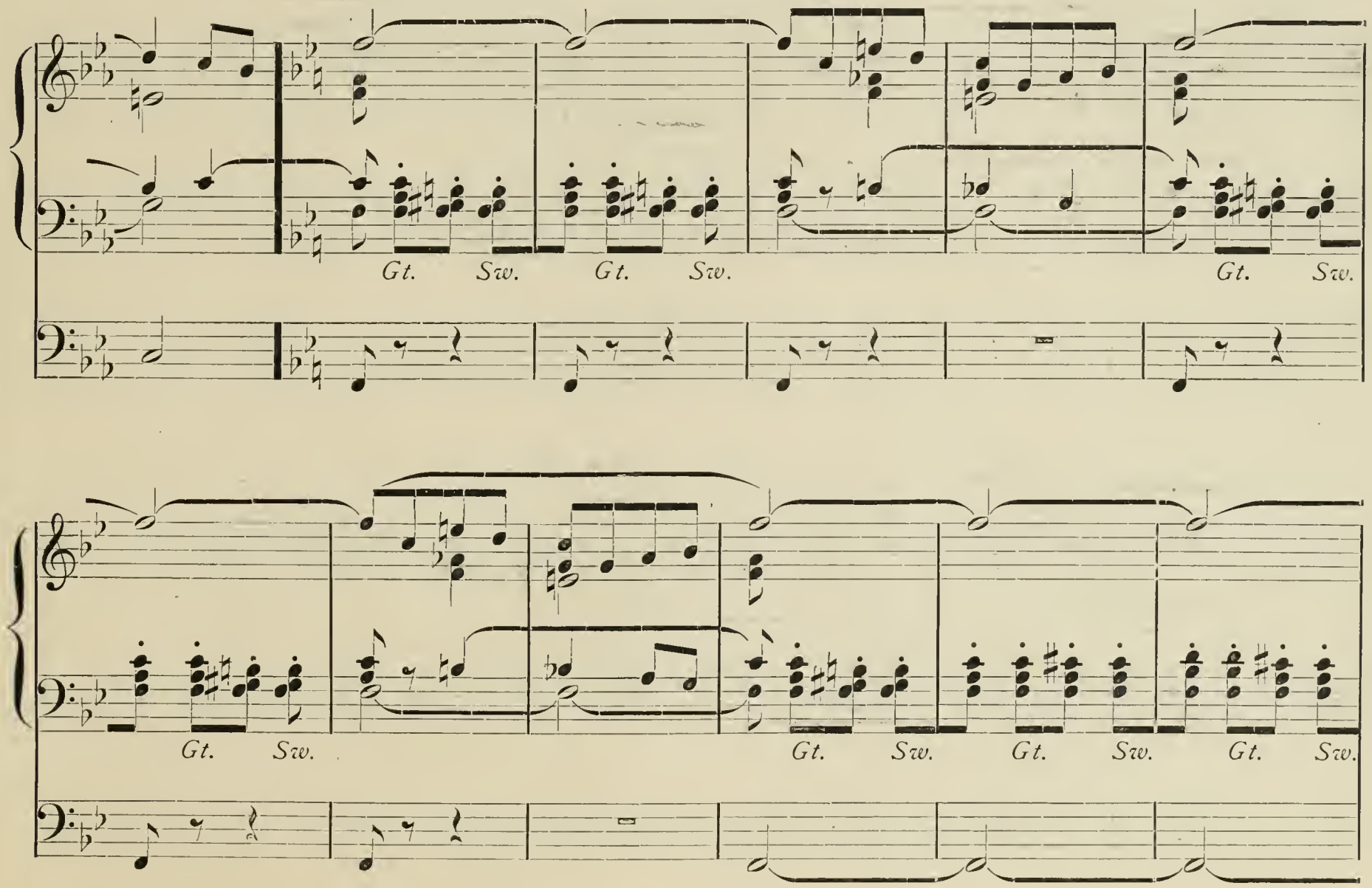

p
Gt.
Ch.
Gt.
Ch.
Gt.
Ch.
Gt.
Ch.
Ch.
Ch.
p
Sw.

Sw.

Ch.

Ch.


Sw.
Oboe off.


Gt. Sw. Gt. Sw.
Gt. Sw.
Gt. Sw.
Gt. Sw. Gt. Sw. Gt. Sw.

Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw.

Gt. St. Diap. alone. *(Prepare Sw. as before.)*

Ch.
add Op. Diap.

add Gamba *Gt.* *Sw.* *Gt.* *Sw.* *Gt.* *Sw.* *Gt.* *Sw.* *Gt.* *Sw.* *Gt.*

Sw. *Gt.* *Sw.* *Gt.* *Sw.* *Gt.* *Sw.* *Gt.* *Sw.*

Gt. Gt. Gt. Ch.

Ch.

Sw. Gt. Sw. Gt. Sw. Gt.

Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt.

Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw. Gt. Sw.

Gt. Sw. Gt. Sw. Gt. Sw.

(*Prepare Sw. Diapasons and Viol da Gamba.*)

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Sw. *dim.* *pp*

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